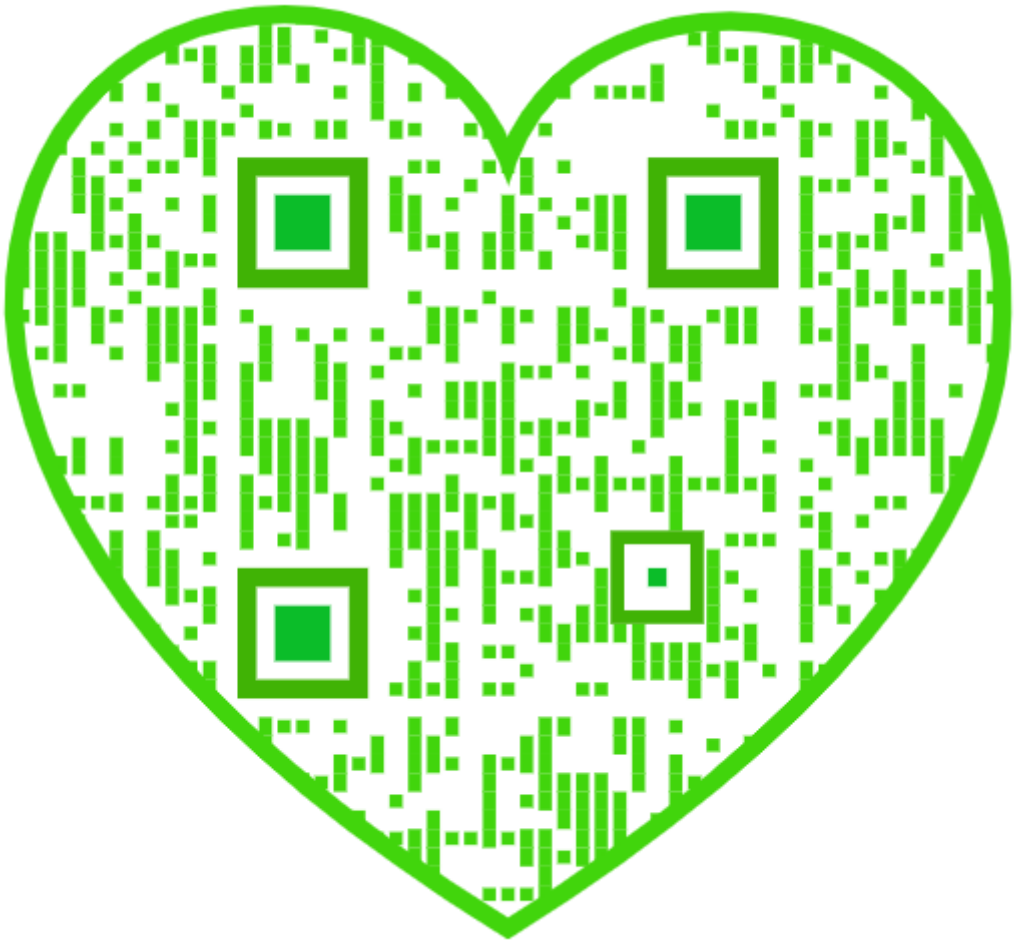

Hotel Number

The ARCHITECT & ENGINEER

JANUARY 1925

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Published Monthly by
THE ARCHITECT *and* ENGINEER *Inc.*
626-627 Foxcroft Building-San Francisco
W. J. Kierulff, *President* — Frederick W. Jones, *Vice-President* — L. B. Penhorwood, *Secretary*

ENTRANCE DETAIL HUNTINGTON HOTEL APARTMENTS, SAN FRANCISCO
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Frontispiece
The Architect and Engineer,
January 1925

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JANUARY
1925

VOL. LXXX
No. 1

Recent Hotel Architecture in California

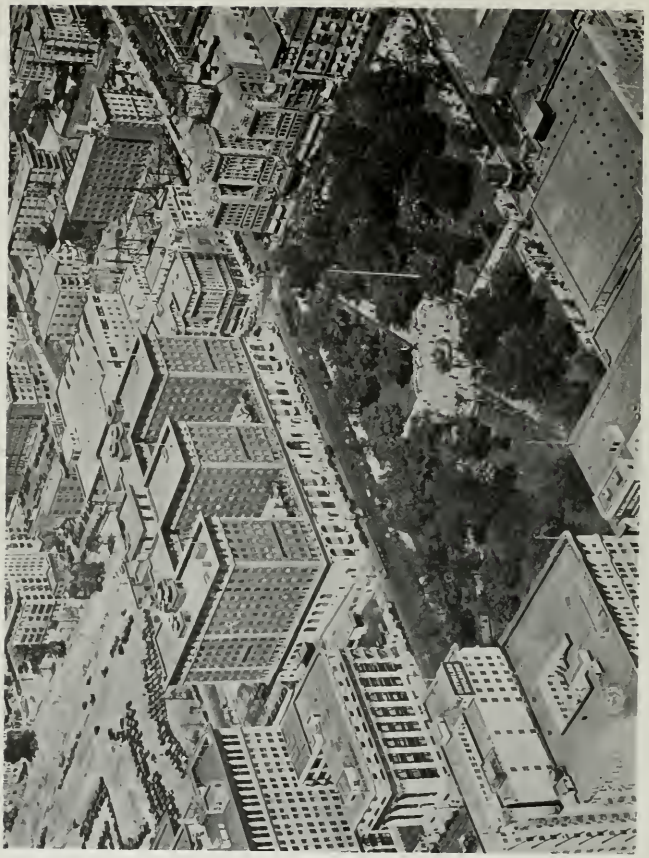
By FREDERICK JENNINGS

IN devoting this issue entirely to hotel architecture the aim has been to show a limited number of new hostelries in California that reflect the very latest ideas in hotel design. The present day requirements of the public are comfort and luxury and the average guest, being willing to pay well for these, owners and speculators have not been reluctant to invest large sums to meet the demands. The hotels illustrated in this number are the Los Angeles Biltmore, The Senator in Sacramento, The Californian in Fresno and the Californian and Huntington in San Francisco. The Huntington is a combination hotel and apartment house and is probably the most notable building of this type on the Pacific Coast. All five hotels have been completed during the past year at a total cost of more than twenty millions of dollars.

* * * *

The Los Angeles Biltmore is the largest hotel west of Chicago. There are 916 guest rooms and 826 bath rooms. The total dining capacity, including private dining rooms, is 2500. The construction is fire-proof, of steel frame with reinforced concrete floors. The exterior materials are granite and limestone on the lower stories and light red brick with terra cotta trim above. Power for the hotel is supplied by a central station. Heating is by two-pipe steam system from oil fuel. Gas is used in the kitchen. A refrigeration plant of 100 tons capacity is installed; also a water softening system, which provides ice-cold water in all the guest rooms by the simple turn of a faucet.

The scheme of the Biltmore interior is built around a long gallery which extends through the entire length of the building. From it all the public rooms are reached through monumental doorways. The lobby occupies the first three floors of the center wing. It is a distinctive expression of Spanish renaissance; the focal points of decoration are the marvelously elaborate staircase with richly wrought balustrade and the vigorous beamed ceiling, accented by antique lanterns of heroic size which appear to advantage in contrast with the simple travertine walls of the lower part of the room. The main dining room is arranged with



AIR PLANE VIEW LOS ANGELES BILTMORE
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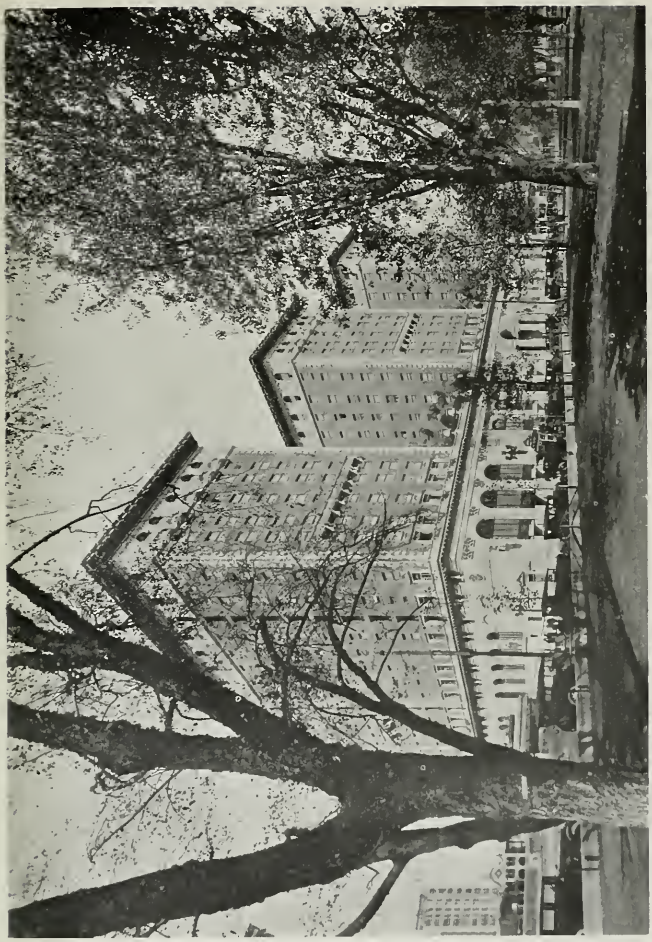
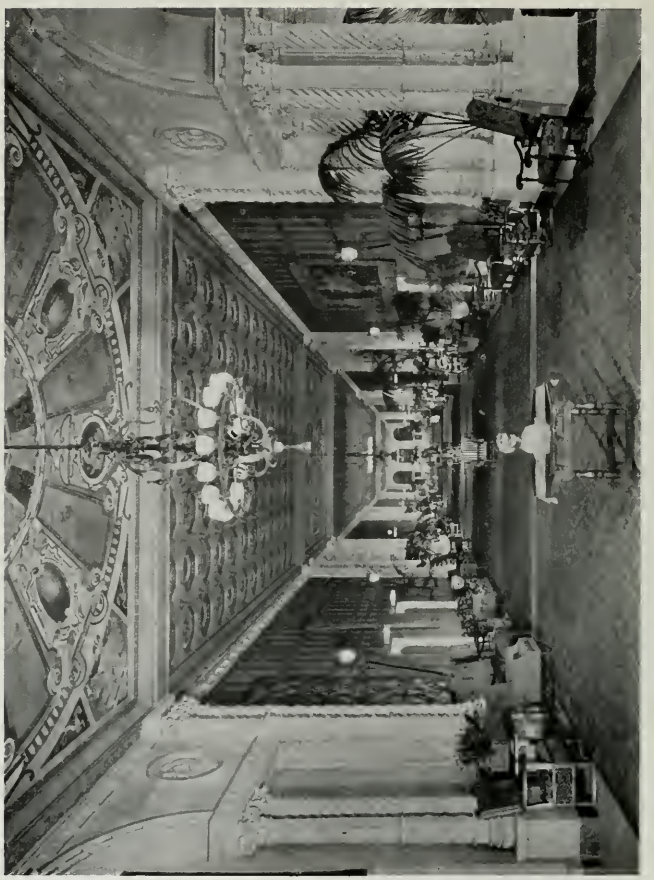
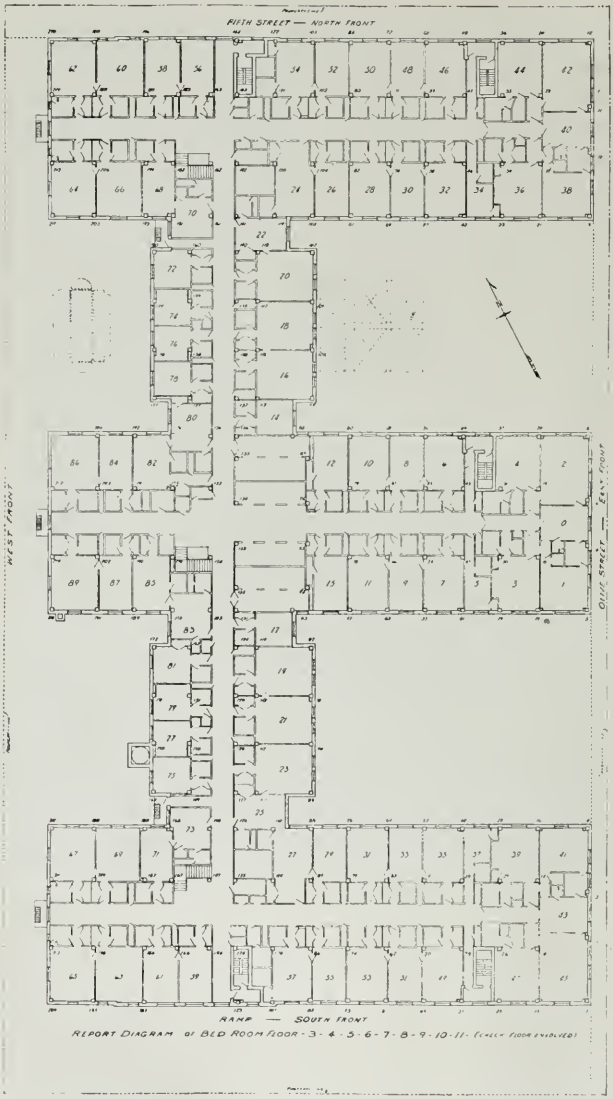


LOS ANGELES BILTMORE, LOS ANGELES
SCHULTZE AND WEAVER, ARCHITECTS



GALERIA REAL, LOS ANGELES BILTMORE
SCHULTZE AND WEAVER, ARCHITECTS

SUPPER AND PALMROOM, LOS ANGELES BILTMORE
SCHULTZE AND WEAVER, ARCHITECTS

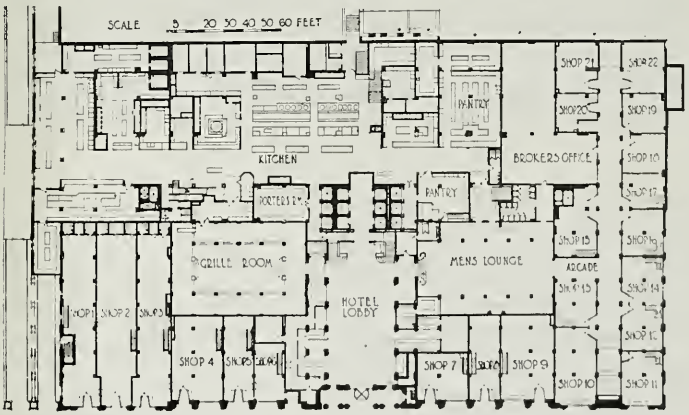

FIFTH STREET — NORTH FRONT
WEST FRONT
OLIVE STREET — EAST FRONT
RAMP — SOUTH FRONT
REPORT DIAGRAM OF BLD ROOM FLOOR - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11 - (EACH FLOOR EVOLVED)

TYPICAL FLOOR PLAN, LOS ANGELES BILTMORE
SCHULTZE AND WEAVER, ARCHITECTS

ENTRANCE LOS ANGELES BILTMORE
Schultze and Weaver, Architects

two rows of large columns of porous travertine supporting a richly decorated beamed ceiling. The columns and walls are non-resonant which produces perfect sound-deadening properties.

The decorations of the hotel, as well as the furnishings, are developed from Spanish and Italian prototypes, and are carried out in fine materials so that the hotel is equipped in keeping. The guest room floors provide both single bedrooms and suites of rooms, and the planning is such that intercommunication may be arranged.



GROUND FLOOR PLAN, LOS ANGELES BILTMORE
Schultze and Weaver, Architects

The Hotel Senator, Sacramento, opened to the public in September, is possessed of a pleasing architectural design, strongly influenced by the Farnese Palace in Florence. The portico—a graceful adaptation of the typical Florentine Italian renaissance pavilion—already has become a popular gathering place for statesmen and other prominent citizens. The exterior of the hotel is finished in peach glow terra cotta which blends harmoniously with the surrounding foliage. The main lobby of the hotel is flooded with sunlight through warm tone glass in the court, the dominating color—amber—being relieved by the polychrome of the balconies and soft Tiffany iridescence that has been applied to the Dutch metal surfaces.

A pleasing accent is given by the treatment in a pastel color composition of the revolving entrance doors, suggesting early Italian motives.

BALL ROOM LOBBY, LOS ANGELES BILTMORE
Schultze and Weaver, Architects

As one enters a restful effect is given by the black and gray marble of the lobby floor, which enhances the sumptuous effect of the rich rugs and rare Italian furniture.

The main dining hall is an out-standing feature of the new hostelry. This room is 46x61 feet with a ceiling 20 feet high. The design is carried out in imitation of one of the famous Florentine stone rooms, the walls being jointed off like stone while the beam ceiling is covered with exquisite hand-painted panels, each a replica of some ancient motif. The dining room opens on three sides into a colorful garden. Over the three panels of the doorways of this room are exquisite paintings by Chas. T. Austin. In immediate communication with the main dining hall are the Roman dining room and ladies' tea room. The latter is decorated in Peacock blue and other soft tones. All guest rooms in the Hotel Senator have outside exposure, each with its private bath and shower. The hotel

represents an outlay of $2,500,000. The plans were prepared by Kenneth MacDonald, Jr., architect, and Maurice C. Couchot, engineer.

The Californian in Fresno, was designed by Architects H. Rafael Lake and the R. F. Felchin Company of Fresno and cost complete $1,200,000. The building is eight stories and contains 260 guest rooms in addition to shops and stores on the ground floor, a large banquet hall on the second floor, a mezzanine lounge, women's writing and card room, private dining rooms and sample rooms. The exterior of the building is finished in salmon colored face brick and cast cement. The interior lobby is finished in porous travertine with grey Tennessee marble floor. The dining room is finished in Caen stone and ornamental ceiling. The top of the building is surmounted by a loggia from which may be had a splendid view of the entire San Joaquin Valley.

MUSIC ROOM, LOS ANGELES BILTMORE
Schultze and Weaver, Architects

The Huntington Apartments occupy a picturesque spot on Nob Hill, a site possessed of early San Francisco romance. From this emminence Don Gaspar de Portola and Father Junipero Serra looked out across the hills and harbor and dedicated the city to St. Francis. Here were the homes of the Argonaut, social elect, and those who rushed to the Golden Gate in the "Days of Old, the Days of Gold, the Days of '49". The Huntington Apartments are 12 stories high on California street and 15 stories on Pine street, with spacious garage in the basement. There are 140 apartments of from one to six rooms. There is no general dining room but the management serves meals in the apartments. Electricity plays a very important part in the operation of this structure. Each kitchen is wired for an electric refrigerator; an electric suction fan on the roof provides kitchen ventilation; motors make possible the opera-

tion of vacuum cleaners; each room has three convenience outlets and every kitchen is equipped with an electric range. The Huntington was built at a cost of $1,600,000 and was designed by Architects Weeks and Day of San Francisco.

* * * *

The Hotel Californian is San Francisco's newest hostelry. It is owned by Mr. M. A. Little, former builder. The building is 12 stories and the fact that four more floors are to be added this year is evidence of its popularity. There are 250 guest rooms, all outside and having private baths. The hotel has a very imposing and comfortable lobby, the walls and ceiling being finished in genuine Italian travertine marble. It is stated that the decorations of the lobby alone cost the owner more than $65,000. Mr. Edward E. Young is the architect of the Californian.

DETAIL OF UPPER STORIES, LOS ANGELES BILTMORE
Schultze and Weaver, Architects

Architecture and the Hotel

By JOHN McENTEE BOWMAN

THE building of a great hotel, a real monument to civic achievement, means much to any city, and the Los Angeles Biltmore more than fulfills the idea and the promise. This hotel sets a new mark for the west, equalling anything that has been produced in the east, and in the extent of its public rooms and decorative features surpasses as a whole all other hotels in the world.

The Biltmore represents an enormous undertaking. The idea of such a hotel for Los Angeles was conceived by Lee Phillips, a local capitalist and financier, and with the grounds and furnishings represents an

outlay of over ten millions of dollars. Upon completion of the financing of the building the operating company was formed by myself and associates, and the hotel started operating without a cent of indebtedness.

It is impossible to think of a hotel as a detached architectural abstraction, as a thing devoid of human life. It must be a background for a ceaseless pageant of romance, a kaleidoscope of the world's progress.

The great modern hotel provides for the public a permanent exhibition of the latest and best of interior decoration. The Commodore in New York anticipated in a degree the current vogue for Spanish adaptation, and the Los Angeles Biltmore has carried out the idea, aided by a true atmosphere furnished by California's early history and government.

The hotel in the modern scheme of society is distinctly an architec-

MAIN DINING ROOM, LOS ANGELES BILTMORE
Schultze and Weaver, Architects

tural opportunity, because it admits of interpreting taste in architecture and interior decoration; because it reflects the spirit of the times. It supplies a setting which unconsciously appeals to all within its influence. Applied specifically, and assuming good service, it is usually architecture which primarily influences the choice of a hotel, a dining room, a lounge or a ball room.

The Los Angeles Biltmore, with its oustanding adaptations of the renaissance periods, is widely supplying the motif for decorative detail.

* * * *

The Spiritual Value of a Building

A building is more than brick, iron, mortar, stone and lumber. It is an idea, and as such is either good or bad, worthy of preservation, or deserving of condemnation.

AUTOMOBILE RAMPS, LOS ANGELES BILTMORE
SCHULTZE AND WEAVER, ARCHITECTS

Economics of the Hotel Project

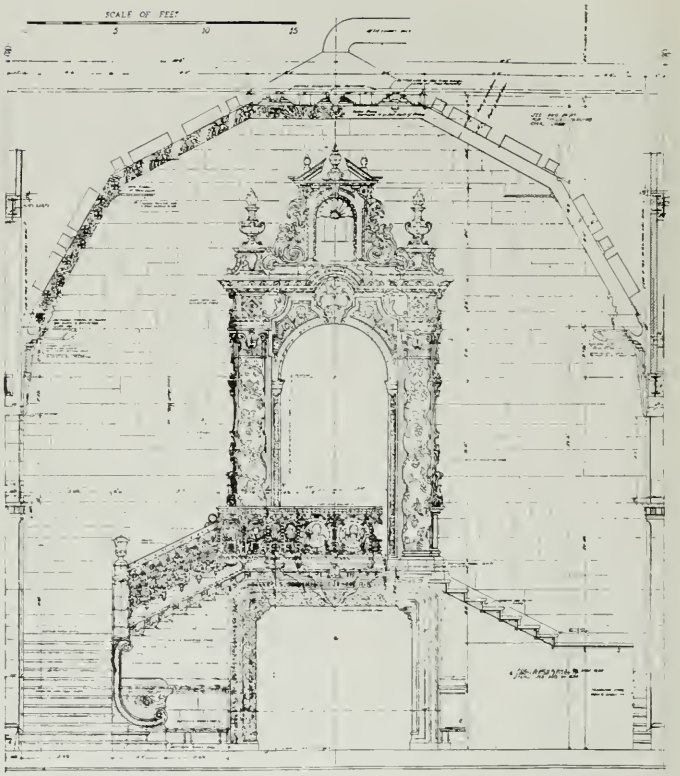
By DANIEL P. RITCHEY
in The Architectural Forum

THE first practical business consideration relative to a new hotel project is the preliminary analysis of community hotel requirements in order to measure local interest and support and to determine the requisite size and type of hotel, together with the most logical site. In smaller cities or towns the moral support and recognition of civic organizations such as chambers of commerce is considered of more importance than direct financial support. The actual financing of the project, if any part of it is to be undertaken through civic interest, should be developed through a small group of leading citizens, such as bankers and local merchants rather than directly through civic organizations, in order to facilitate the handling of the actual business transactions involved; otherwise, a complex condition arises, involving many personal interests and thus making the project more difficult to handle in a businesslike and politic manner.

In selecting a site for a hotel to be located in a smaller city or town, the primary considerations are convenience of transportation, the possibilities presented by main arteries of motor travel and the physical characteristics of the land in question. In the last few years the various types of hotel guests have become educated to demanding better service and different surroundings, so that in locating new hotels there is an inclination to get away from the purely commercial centers and to take patrons to a section of the city that has the quiet of residential surroundings, but within reasonable proximity to amusement centers. In the larger cities the definite requirements of hotel types serve to indicate locations; but in smaller cities it is well to consider the possibility of locating in a logical section which is subject to development by attracting civic growth in that direction. It is not only true that hotels should be located in the path of high class residential or business expansion but also that in many instances the location of a new hotel will definitely encourage such growth. It is also well to consider the possibilities presented by adjacent apartment building development which will lend support to the restaurant and to the concessionaires depending upon transient trade as well as upon that of hotel guests.

In the matter of relative cost of land and building, it may be taken as a general economic theory that land should not exceed 20 per cent of construction and equipment cost. This point is primarily determined by community conditions affecting sub-rentals. If the primary income of the hotel is from the rental of rooms, a 20 per cent relationship limit should be maintained. If, however, there is an opportunity for providing stores and valuable concessions in the plan, it is logical to pay as much more for land as the additional sub-rental income may show to be a good investment as compared with the same space rented on a prevailing room rental basis. For example, a hotel located at 57th street and Madison avenue, New York, would probably bring no greater room rentals than if located on Central Park West. But in the Madison avenue location there might be a sub-rental equal almost to one-half of the income from rooms. Therefore a much higher land investment could be made at that point than at Central Park West, which is strictly residential in character.

Of course, the 20 per cent limitation must be highly flexible, and



GRAND STAIRCASE, LOS ANGELES BILTMORE
SCHULTZE AND WEAVER, ARCHITECTS

LOBBY AND STAIRCASE, LOS ANGELES BILTMORE
SCHULTZE AND WEAVER, ARCHITECTS

WROUGHT IRON GATE, ENTRANCE TO DINING ROOM,
LOS ANGELES BILTMORE LOS ANGELES

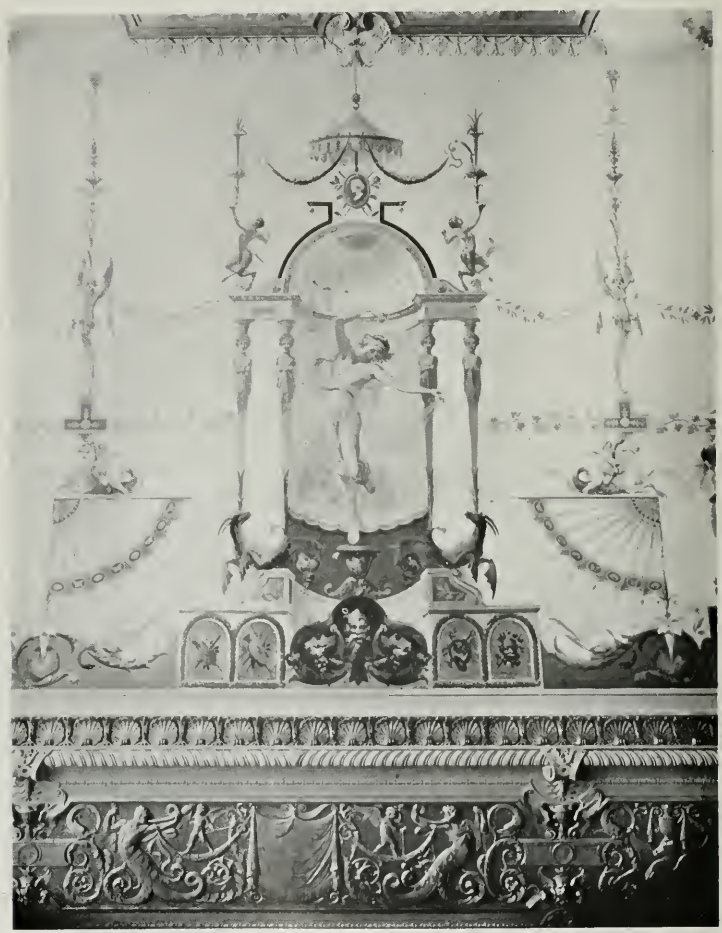
DETAIL OF CEILING, LOS ANGELES BILTMORE
SCHULTZE AND WEAVER, ARCHITECTS

ENTRANCE TO GALERIA REAL, LOS ANGELES BILTMORE
SCHULTZE AND WEAVER, ARCHITECTS

DETAIL OF CEILING, SUPPER ROOM, LOS ANGELES BILTMORE
SCHULTZE AND WEAVER, ARCHITECTS

ENTRANCE TO BALL ROOM, LOS ANGELES BILTMORE
CAEN STONE BY MACGRUER AND SIMPSON

DETAIL OF BALL ROOM, LOS ANGELES BILTMORE
SCHULTZE AND WEAVER, ARCHITECTS



DETAIL BALL ROOM CEILING, LOS ANGELES BILTMORE
SCHULTZE AND WEAVER, ARCHITECTS

to a certain extent is regulated by the kind of hotel which is desired for the community. If transient trade were the larger element, it would be well to pay more for the land in order to obtain a more convenient transient location. If the hotel occupancy is to be divided between transient, semi-residential and club types (with a floor or two of smaller rooms with group bath and toilet conveniences to be offered at lower rents), the cost of land would probably be compatible with the rentals to be obtained from the class of guests and tenants anticipated. In the average community the tendency in hotel planning seems now to include not only provision of rooms for transient guests, including commercial travelers, but for housing of community activities and resident guests.

With the increased cost of building construction there is a trend toward the reduction in extent of non-paying public space, and even the provision of entertainment spaces is worked out in such a manner that when these are not in use for special functions they can be employed for the general use of guests, as public space which may be shut off and used for special functions when necessary. Thus, in one of the large older hotels in New York, encroachments have been made on what was formerly dining room space, grills and tea rooms. Here the dining equipment has been removed, and this space is used for drawing rooms, writing rooms and other public conveniences except at times when it is required for special functions or for afternoon teas. Space which previously was equipped throughout with tables set up for 24-hour service has been doubled in its usefulness and with a reduction in overhead expense.

There are several methods through which the financing of the average hotel project is developed, but the primary problem is usually the first mortgage which may be obtained locally in the larger cities, but rarely in smaller cities or towns. Much of this mortgage financing is carried out by large mortgage bond companies which operate nationally or in limited sections of the country, and while the usual proportion of the first mortgage is 60 per cent of the cost of land and building, it is possible to obtain as high as 70 or 80 per cent where an amortization mortgage requires the payment of from 8 to 10 per cent of the principal each year.

The secondary financing is the more interesting for consideration, and this is usually provided by the sale of stock or second mortgage securities. It is practical to organize two companies, one to be the "holding company" for the ownership of the building and the other company an "operating company," unless the hotel is to be directly leased to an outside lessee.

The more successful manner of promoting the holding company is to present to puchasers of stock an opportunity to share in the profits of the operating company. As an example, we may relate the experience of a hotel owner in an active industrial city where the original hotel had practically outlived its usefulness and the citizens wanted a new hotel. This hotel owner was not financially able to bear the necessary investment cost, but he decided to build a new hotel which would absorb his present property, taking in with him, as joint owners, local manufacturers and merchants. The new holding and operating companies were organized, a long-term management contract given to the original owner, and two-thirds of the stock of both companies was offered locally and quickly absorbed. There was a keen interest in sharing the ownership of the company and profit of the operation. The holding company

HUNTINGTON HOTEL APARTMENTS, SAN FRANCISCO
WEEKS AND DAY, ARCHITECT AND ENGINEER

which financed the building was limited to a profit of 7 per cent in the form of a lease to the operating company, and it was found after going into operation that the operating stock brought up the income on the entire investment to better than 20 per cent. Thus the individual who did not want to limit the investment possibilities of his funds to 7 per cent was attracted to the proposition, and financing was quickly provided.

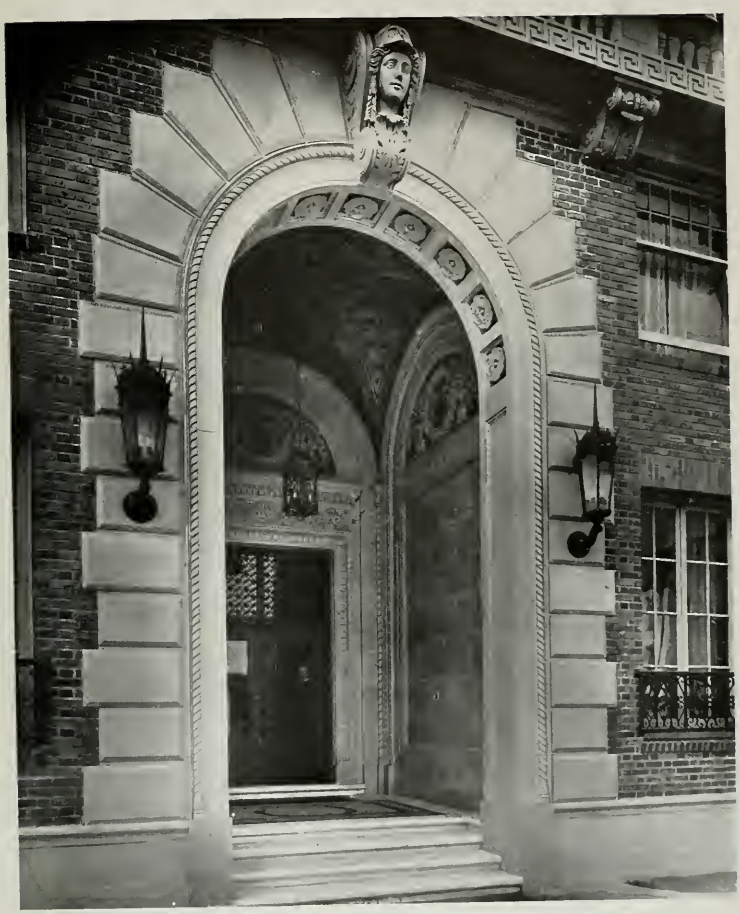
One of the most successful methods of financing the equity in a new hotel project is to arrange a lease which will obviously insure the safety of this investment with a good return to the investor. The lessee may be a well known hotel man or a hotel operating company having a sufficient reputation to assure prospective investors in the holding company. In nearly all cases the tenancy of a hotel lease is for 21 years. It is usually desired, but not always required, that if this is to be a newly formed operating company, the manager who may be brought in shall have an investment in the operating company. This is not usually a large investment, probably $10,000 on a term basis, but it serves to indicate sincerity and direct personal interest.

In the making of the original lease, it is customary that the lessee shall provide his own furniture, and as a rule the owning company accepts this furniture as the final security in making the lease. In fact it is highly desirable that the furniture shall constitute this security, as in case of any default it would be a serious interruption to the hotel's business to have the furniture taken out or subject to process of law. In order to cover the period before the hotel is furnished, a deposit is usually taken on the signing of the lease, equal to the value of furniture, and refunded to the lessee as the furniture actually goes into the building.

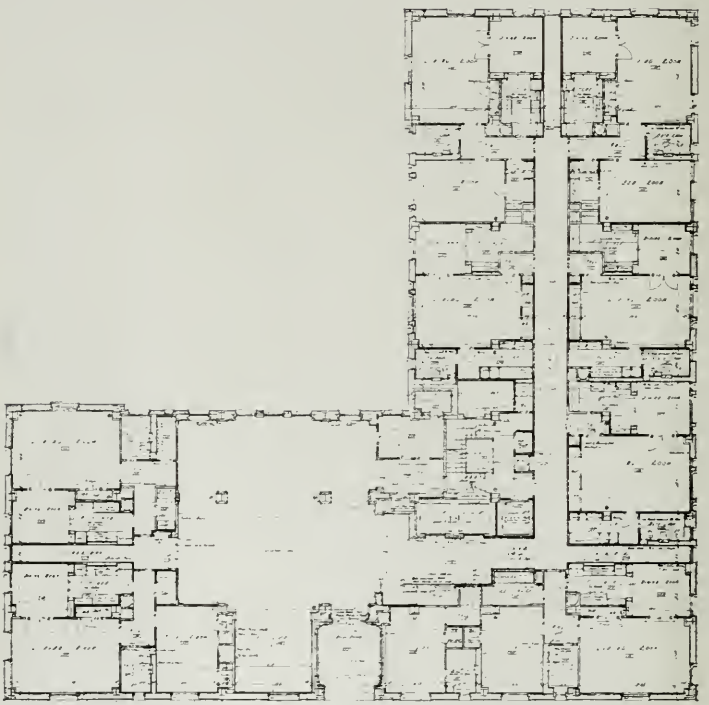
There are several forms of establishing rental terms in the hotel lease. Perhaps the most customary method is that the leasing figures shall be established on a basis of net percentage of the agreed appraisal of land and building value. Usually the tenant assumes all taxes, assessments, repairs and similar costs, including a net percentage on the property valuation, which varies from the 4 per cent requirements of large estate owners, to as high as 7 or 8 per cent of the actual investment value. An interesting form of hotel lease which is becoming more popular each year is on the basis of a price per room. Basic values are figured on a net or gross rental by room plus a percentage figure on sub-rentals. In many of the newer hotels, erected by speculative or investment builders, the owner rents the rooms to a managing lessee and retains all concessions and sub-rentals or the sub-rental space only. Thus, in one large hotel now under construction, two general leases are presented in which the rooms are offered to a lessee for $375,000 a year and the stores have been placed on the rental market for $140,000 a year. This is a practical method of leasing in that it distributes logically divided interests. Where the owner retains sub-rental space, such as stores and shops, it is provided that the lessee of the room section of the building and the restaurants shall provide heat and sometimes light and janitor service in the stores, an allowance being made.

For general figures in estimating leases and furniture costs, it may be assumed that a $600,000 investment would produce in a moderate-sized city a 200-room hotel, which would be first class in its community. The furnishings in a hotel of that type would cost from about $500 to $600 per room, including the furnishing of public spaces and the equipment of the kitchen. For the average resort hotel furnishings are esti-

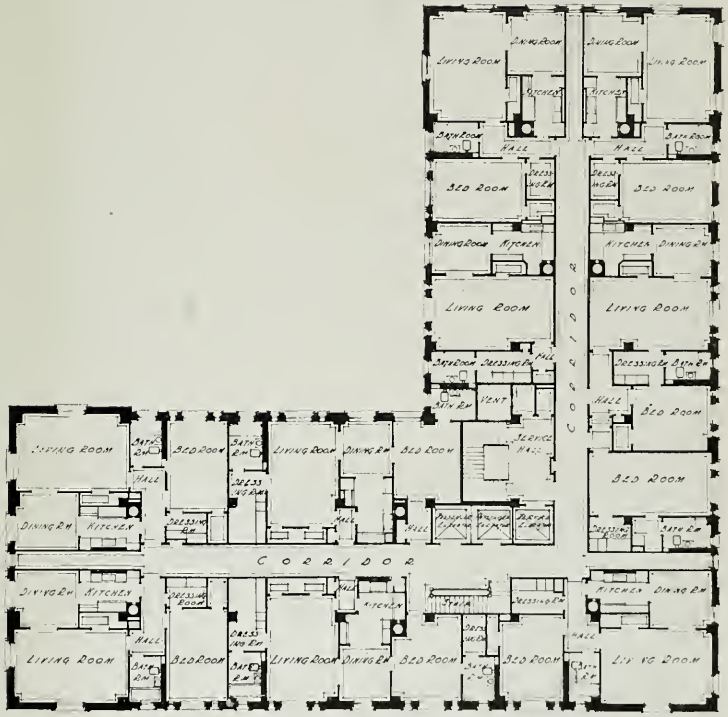
DETAIL OF FACADE. HUNTINGTON HOTEL APARTMENTS, SAN FRANCISCO
WEEKS AND DAY, ARCHITECT AND ENGINEER



ENTRANCE, HUNTINGTON HOTEL APARTMENTS, SAN FRANCISCO
WEEKS AND DAY. ARCHITECT AND ENGINEER



GROUND FLOOR PLAN, HUNTINGTON HOTEL APARTMENTS, SAN FRANCISCO
WEEKS AND DAY, ARCHITECT AND ENGINEER



TYPICAL FLOOR PLAN

HUNTINGTON HOTEL APARTMENTS, SAN FRANCISCO
WEEKS AND DAY, ARCHITECT AND ENGINEER

LOBBY, HUNTINGTON HOTEL APARTMENTS, SAN FRANCISCO
Weeks and Day, Architect and Engineer

LIVING ROOM, HUNTINGTON HOTEL APARTMENTS, SAN FRANCISCO
Weeks and Day, Architect and Engineer

COURT VIEW, HUNTINGTON HOTEL APARTMENTS, SAN FRANCISCO
WEEKS AND DAY. ARCHITECT AND ENGINEER

TYPICAL BED ROOM, HUNTINGTON HOTEL APARTMENTS, SAN FRANCISCO
Twin Folding Beds Concealed

TYPICAL BED ROOM, HUNTINGTON HOTEL APARTMENTS, SAN FRANCISCO
Twin Beds Down

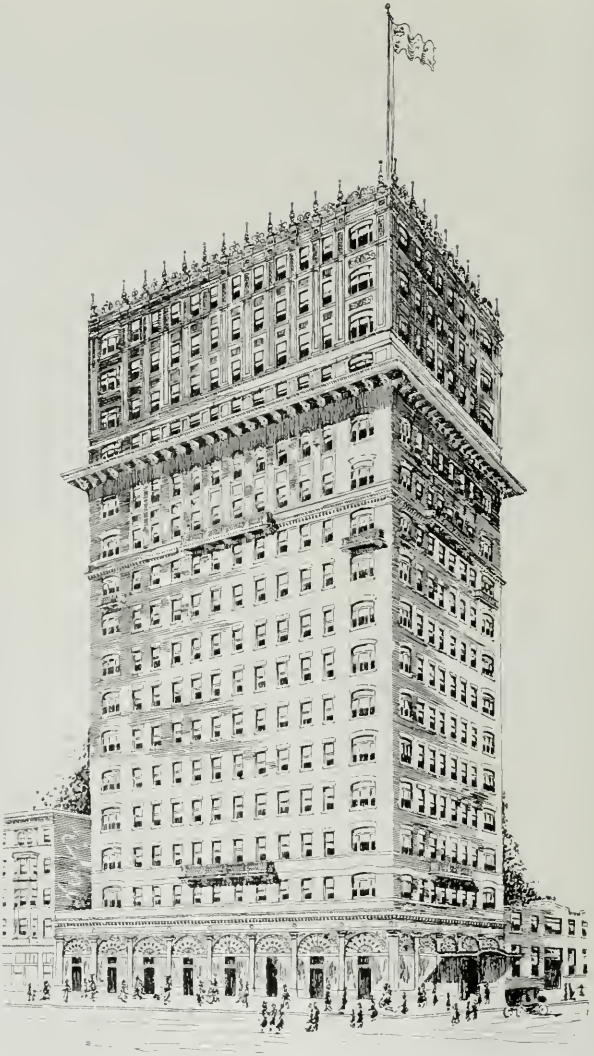
BED ROOM, HUNTINGTON HOTEL APARTMENTS, SAN FRANCISCO
Weeks and Day, Architect and Engineer

mated at considerably less, even as low as $200 per room in a house of 300 rooms or more, yet appropriate and in good taste.

It is generally figured that a room will be rented 250 days a year, and on this basis the value of the lease may be estimated. The hotel manager will estimate his operating cost at one and a half times the cost of his rent. Thus, in a hotel project where the lease is based on $300 per room per year, cost of operating will be about $450 per room per year, making a total cost of $750 per room per year on which there should be an income of $1,000 a year to make an attractive lease proposition. Thus, the net income from the lessee's viewpoint should be from 25 to 33 1/3 per cent of his rental and operating cost. Out of this net income he must carry his investment interest, furniture depreciation and other business items, but the operating cost on a one and a half times rental basis includes taxes and similar charges.

In selling a hotel lease it is almost an established custom among brokers to show that the good-will value of the lease to a buying tenant will pay out through profits in three and a half or four years. In other words, the good-will of the hotel lease is worth four times its actual annual earnings.

In planning for income-bearing space, other than rooms, it is obvious that this space should pay a higher income than the same space given over to room rentals. Otherwise the introduction of the sub-rental or concession is not logical, unless to be of a service character valuable to the comfort of guests in the hotel. The architect's objective should be that every square foot of the building must produce some kind of income.

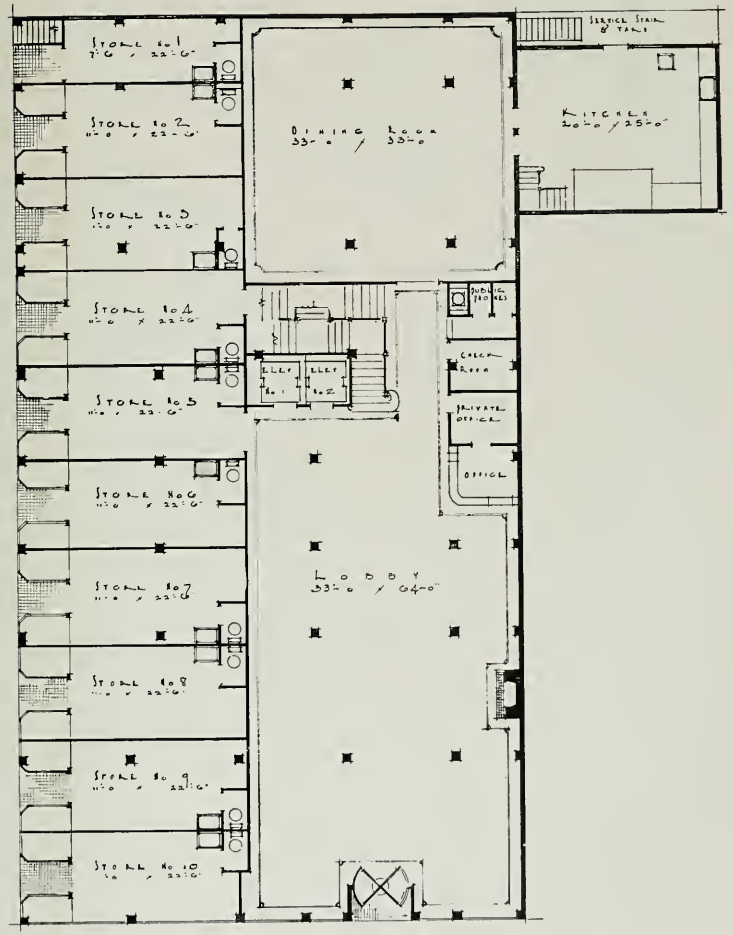


Perspective shows four story addition planned for this year

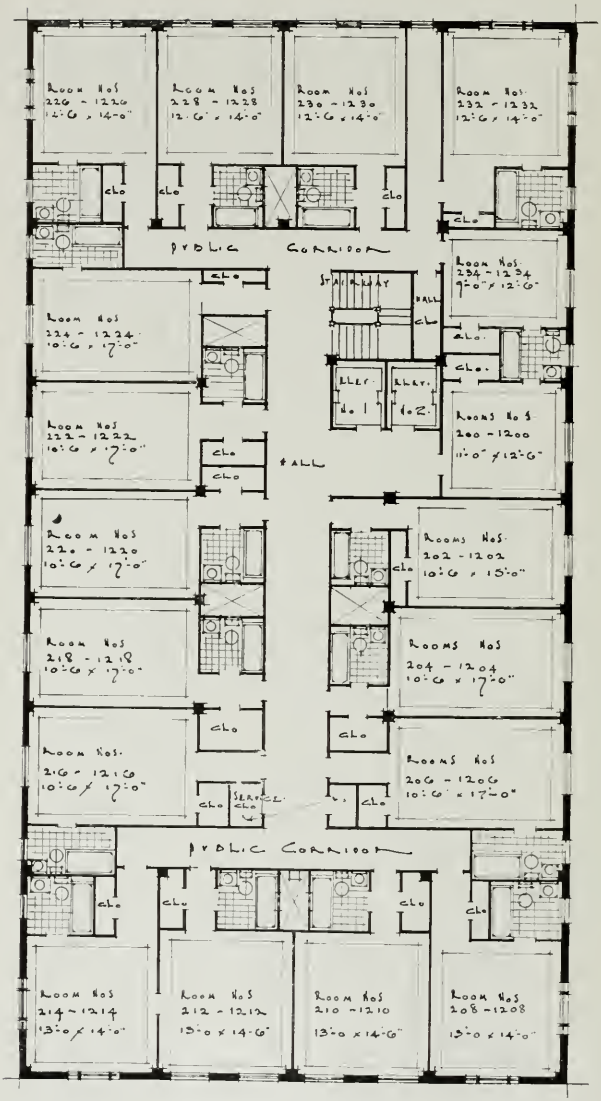
HOTEL CALIFORNIAN, SAN FRANCISCO
EDWARD E. YOUNG, ARCHITECT

HOTEL CALIFORNIAN, SAN FRANCISCO
EDWARD E. YOUNG, ARCHITECT

LOBBY, HOTEL CALIFORNIAN, SAN FRANCISCO
EDWARD E. YOUNG, ARCHITECT



FIRST FLOOR PLAN, HOTEL CALIFORNIAN, SAN FRANCISCO
EDWARD E. YOUNG, ARCHITECT



TYPICAL FLOOR PLAN, HOTEL CALIFORNIAN, SAN FRANCISCO
EDWARD E. YOUNG, ARCHITECT

It is not considered desirable today to attract inside of the hotel people who are not guests. A great many hotels have removed many of the seats in their lobbies and corridors, and the tendency is to produce more of the club atmosphere, to which visitors to the hotel will come for the purpose of calling on guests or patronizing the restaurants.

The question of obtaining income from sources other than rooms and restaurants has become of the greatest importance in the planning of any hotel. Of primary interest are stores and shops which provide rentals sufficiently high to cause the use of ground floor or mezzanine space for such use. The provision of such shops is also a desirable form of service to guests. The various concessions incidental to the hotel's business should also be carefully studied according to local conditions. A partial list of shops and concessions to be noted in various hotels includes news-stands, theater ticket agencies, cigar stands, barber shops, billiard and bowling rooms, beauty shops, Turkish baths, gymnasiums, stock brokers' offices, railroad and steamship ticket offices, telephone and telegraph rooms, flower, novelty and drug stores, and similar service features.

From a business viewpoint concessions are handled by the operating companies in different ways, according to conditions. Often profitable concessions are operated directly by the hotel management. Where concessions are rented out, it is quite customary to arrange leases calling for a minimum rental and a percentage of the gross income, which varies from 5 to 12 per cent, according to the size and nature of the business. In any event, the space allotted to concessions should be deliberately incorporated in the plan rather than accepted as an accidental development of convenience after the floor plans are completed. If a concession is worth operating at all it deserves a logical location in the hotel plan, both for the convenience of guests and to insure profitable operation. A careful preliminary analysis of concessions should be made to determine present and future local demand and that of the specific traveling and resident patrons of types for which the hotel is primarily intended.

Another subject which should be given serious consideration, particularly for hotels in smaller cities and located on well traveled automobile routes, is the establishment of a garage directly under control of the hotel management. It is realized now by hotel men that an important percentage of guests may be obtained through automobile traffic, and the hotel which has garage accommodations, located conveniently and operated in a dependable manner, is certain to enjoy practically all business accruing in the district from this type of transportation. It is usually the case that guests using automobiles arrive rather late at night, and it is a decided drawback if they find it necessary to search around the town for a garage which may be open and in which it may be safe to leave an automobile with its accessories and traveling equipment.

One other important point should be stressed at all times. That is the grave danger of using inferior structural materials and cheaper forms of mechanical installation and equipment. Every hotel man knows by sad experience the cost of replacements and expensive repairs which may soon develop as a result of false economy in the original investment.

The life of the average hotel building is usually figured at about 30 years on a utility basis, but there is no reason why the investment should be written off in this comparatively short period if construction, equipment and location are wisely selected. Even as a chain is as

VIEW FROM PORTICO, HOTEL SENATOR, SACRAMENTO
MACDONALD AND COUCHOT, ARCHITECT AND ENGINEER

STREET VIEW OF PORTICO, HOTEL SENATOR, SACRAMENTO
MacDonald and Couchot, Architect and Engineer

THE PORCH, HOTEL SENATOR, SACRAMENTO
MacDonald and Couchot, Architect and Engineer

WATERCOLOR PERSPECTIVE, HOTEL SENATOR, SACRAMENTO
MACDONALD AND COUCHOT, ARCHITECT AND ENGINEER

strong only as its weakest link, so a hotel structure will invariably show a measure of failure in direct ratio to the inferiority of any important installation.

Architects invariably realize this condition when called upon to design any type of building. Uufortunately, however, it is often the case that an owner will hamper the architect's work and jeopardize his own investment by insisting upon false economy in order to hold down the original building cost.

In the building and equipment of the modern hotel there is no place for extravagance—nor cheapness! Every part of this machine called the hotel building must function daily, year in and year out.

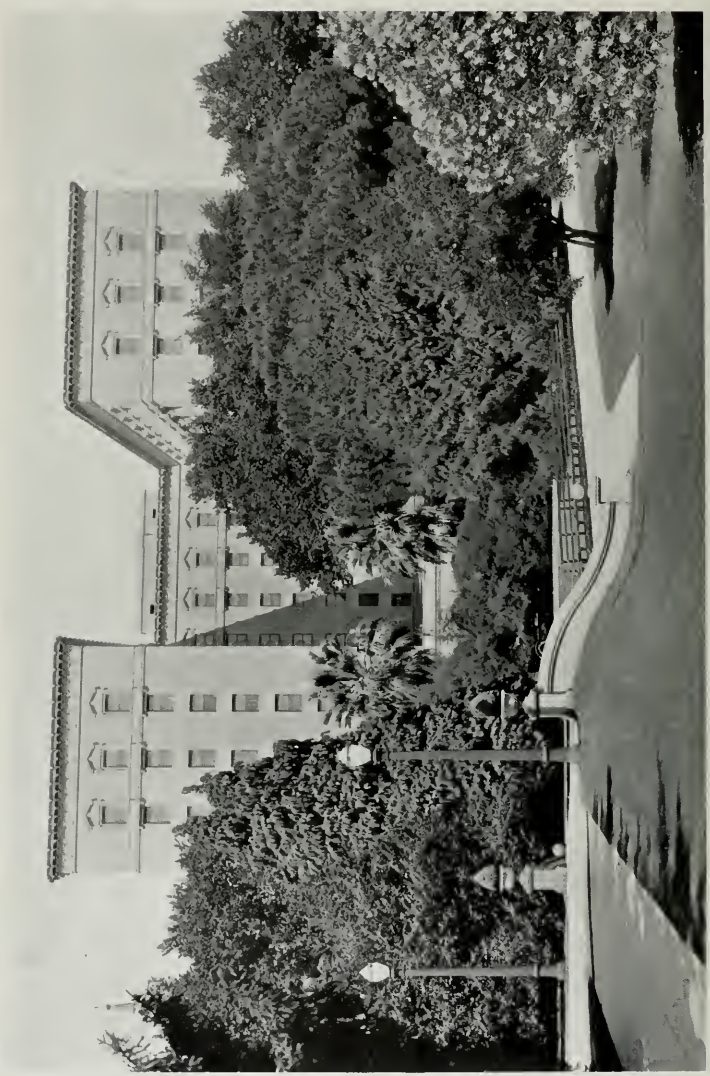
* * * *

Hotel Inter-Communication

THE telephone service connecting all departments of a hotel was adequate for its purpose until within recent years. The unusual amount of labor turnover which occurred in the larger hotels compelled their operators to seek an improved means of inter-communication which would eliminate error in the transmission of messages and, at the same time, would make a permanent record of them. The making of a permanent record fixes the responsibility for errors of omission and commission on the part of the persons involved, and confronted with this condition, the employees naturally give more strict attention to the proper performance of their duties. The number of telephones in a standard installation could not be reduced as there still remained the necessity for a means of communication between the guest room and the operating department and outside points. It was to supplement this essential telephone service with a means of communication which could deliver special messages as rapidly as a telephone and make a written record of them, that the telautograph system was adopted. The favorable consideration of the telautograph was due largely to the experience of many banks which used that system for the secret and instantaneous transmission of inquiries and replies which are peculiar to banking operations. The reliability of such a service is established by the fact that these institutions transfer funds on the authority of telautograph communication. The adoption of this means of communication in several large hotels resulted from this favorable bank experience.

The correct planning and equipment of any kind of building can be accomplished only by having a definite knowledge of the factors which constitute the use of the building. Reliable and instantaneous means of inter-communication is but one of the many things that contribute to the satisfactory and economical operation of an hotel.

The hotel provides the conveniences and comforts of a residence for the guests. It consists of the building and its equipment which functions through the operating organization. The guest communicates with the world through the telegraph, the telephone and the mails. The guest room will soon be connected with the chosen radio broadcasting station. The guest's contact with the operating organization is with the employees and by the telephone. The guest has no direct contact with the telautograph and its work and service is little known. The telautograph is, however, the instrument of service which correlates all of the elements of the operating department and makes possible that effective and satisfying service which distinguishes American hotels.—American Architect.



HOTEL SENATOR FROM STATE CAPITOL GROUNDS, SACRAMENTO
MACDONALD AND COUCHOT, ARCHITECT AND ENGINEER

CORNER MAIN DINING ROOM, HOTEL SENATOR, SACRAMENTO
MACDONALD AND COUCHOT, ARCHITECT AND ENGINEER

LOBBY, HOTEL SENATOR, SACRAMENTO
MacDonald and Couchot, Architect and Engineer

GUEST ROOM, HOTEL SENATOR, SACRAMENTO
MacDonald and Couchot, Architect and Engineer

Planning the Hotel Laundry

By WILLIAM HAMILTON

SNOW white, sweet smelling linen, abundant and perfectly ironed, is a prime essential of real hotel service. Fortunate, indeed, is the hotel which operates its own laundry making possible a steady flow of linen and a constant standard of laundering.

The modern hotel is self dependent and relies less and less on outside agencies. Outside laundering of linen hampers flexibility in the handling of conventions and other peak loads, and necessitates the carrying of large linen stocks. Moving linen to outside agencies results in

LAUNDRY, HOTEL SENATOR, SACRAMENTO
MacDonald and Couchot, Architect and Engineer

petty losses. Condemnations are less in the internally operated plant and the standard of work should be higher.

The hotel whose laundry bill exceeds $300 per month enters the group where a laundry may be self-supporting. Many new and interesting developments in direct motor driven mechanical equipment make the operation of the small plant closely approach that of the large hotel in efficiency. The production of flat work ironers capable of efficiently ironing sheets while handled by but two operators is most notable.

At one time the commercial laundry was bidding for hotel laundry work and in many cases doing it at a loss under the impression that it made a good filler to keep the plant going. The large check received at the end of the month was the only item considered. Hauling charges, drivers' commissions, and many other items were neglected. Modern cost systems in laundries have shown that in many cases in the past hotel laundry work has been done far below the actual costs. Prices

have been raised not only to include costs but excellent profits. Hotel men and their architects and engineers are now paying more attention to laundry installations. No hauling problem is involved in the internally operated hotel plant. This point alone puts the hotel from fifteen to twenty per cent ahead of the commercial laundry on costs.

The hotel architect and engineer must consider space, capacity, and speed; must select equipment that can be relied upon to stand heavy and continuous duty; must consider the probable upkeep, quality of work, cost of supplies, labor, power, and replacement, for different types of equipment.

The laundry installation of the new Hotel Senator at Sacramento embodies both flexibility and quality of production. It is equipped with three motor driven washers, high speed extractors, prim press, lace curtain dryer, both drying and shaking tumblers, and six roll ironer. The plant is capable of handling immense volumes of linen during convention and State Fair seasons and yet operates efficiently under a normal load.

Basement floor space that might otherwise prove unprofitable may often be used to advantage for laundry installation if proper ventilation is provided. The laundry of the Hotel Senator has a ceiling height of only 8'9" and a clearance of but 7'9" under beams, but through provision of proper hoods and a change of air every two minutes is cooler in the summer months than some ground floor plants in the same city.

The hotel of 400 rooms or more may find a splendid addition to service and a profitable department in handling guests' work. The location of the finished work laundry within the building permits a one day service without the rush and inconvenience of connecting with outside deliveries.

The development of direct geared motor driven equipment has eliminated the greater portion of the maintenance problem that went with the old type laundry. Monel metal washers give twice the cylinder life of old type brass machines. Power presses for the finishing of starched coats replace foot power machines. Gas has been eliminated as a heating element by steam and electricity. The properly planned hotel laundry of today is simple of operation, quiet and without vibration, and in many hotels the most profitable service department.

* * * *

Architectural Firms Enter Final Competition

OUT of 44 competitors who submitted sketches for the $5,000,000 group of buildings to be built by the Harvard business school at Cambridge, Massachusetts, under the George F. Baker Foundation, one Minneapolis firm and five of New York have been selected as winners in the first stage of the competition.

The following firms have been chosen by the committee to enter the final competition: Hewitt & Brown, Minneapolis; Aymar Embury; Raymond M. Hood; Ludlow & Peabody with Harold F. Kellogg of Boston, associated; Benjamin W. Morris, with Eric Gugler, associated, and Egerton Swartwout, all of New York.

* * * *

Proper Awe

Mrs. Brown was almost speechless as she beheld the Grand Canyon.

"Isn't it wonderful?" she gushed.

"I'll say so," responded Mr. Brown, who mixed contracting with politics, "Boy, that was SOME excavating job."—Seattle P.-I.

KITCHENETTE, SHOWING ELECTRIC RANGE, HUNTINGTON HOTEL APARTMENTS

The Electric Range for Apartment Hotels

By J. W. WRENN

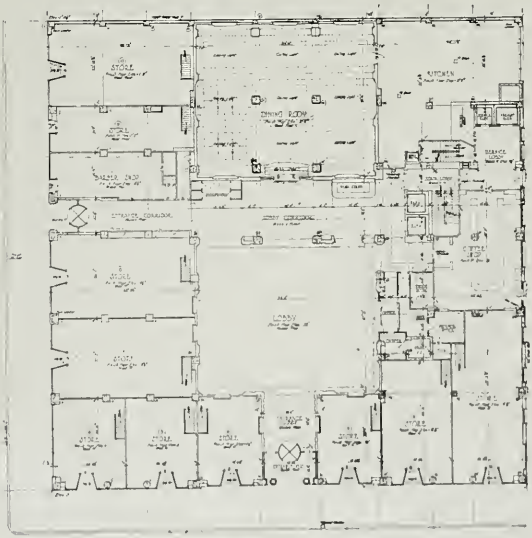
IN designing apartment houses, especial attention is being given to built-in features that save space, give greater conveniences to the tenant, and reduce general upkeep for the owner.

The electric range is a space saver and several types are now on the market that may be used as a portion of the built-in features of the kitchen.

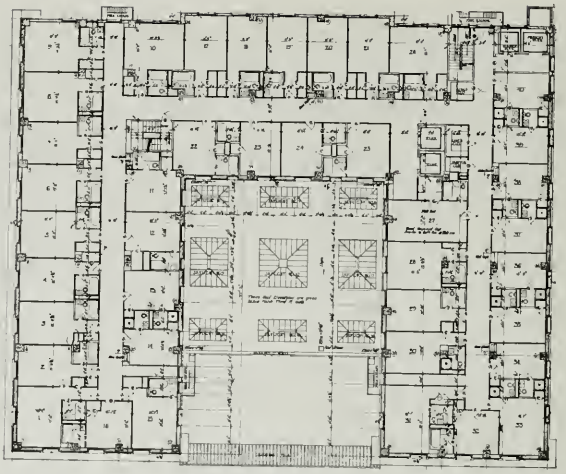
Of these types, one is built into the wall, the front of the ovens being flush with the face of the wall, the cooking top projecting from 12 to 14 inches into the room. Another is built into a small alcove entirely sur-

THE CALIFORNIAN HOTEL, FRESNO
H. RAFAEL LAKE, ARCHITECT
R. F. FELCHIN AND CO., ASSOCIATED

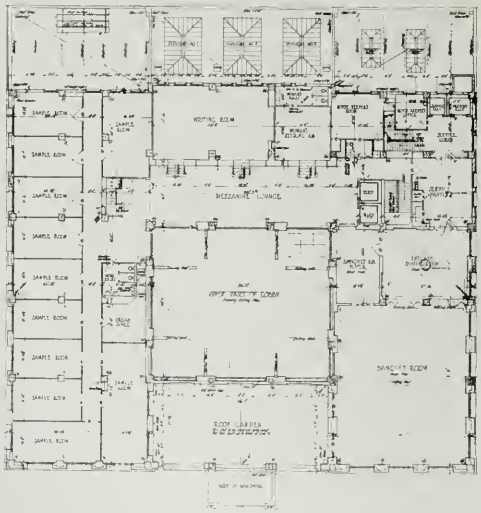
NIGHT ILLUMINATION, ENTRANCE, THE CALIFORNIAN HOTEL, FRESNO
H. Rafael Lake and R. F. Felchin and Co., Architects



GROUND FLOOR PLAN, THE CALIFORNIAN HOTEL, FRESNO



THIRD FLOOR PLAN, THE CALIFORNIAN HOTEL, FRESNO
H. Rafael Lake and R. F. Felchin and Co., Architects



SECOND FLOOR PLAN, THE CALIFORNIAN HOTEL, FRESNO
H. Rafael Lake and R. F. Felchin and Co., Architects

ROOF GARDEN, THE CALIFORNIAN HOTEL, FRESNO
H. Rafael Lake and R. F. Felchin and Co., Architects

LOBBY, THE CALIFORNIAN HOTEL, FRESNO
H. RAFEAL LAKE AND R. F. FELCHIN AND CO., ARCHITECTS

LOBBY, SHOWING ORGAN LOFT, THE CALIFORNIAN HOTEL, FRESNO
H. RAFAEL LAKE AND R. F. FELCHIN AND CO., ARCHITECTS

ENTRANCE TO DINING HALL. THE CALIFORNIAN HOTEL, FRESNO
H. RAFAEL LAKE AND R. F. FELCHIN AND CO., ARCHITECTS

MAIN DINING ROOM, THE CALIFORNIAN HOTEL, FRESNO
H. RAFAEL LAKE AND R. F. FELCHIN AND CO., ARCHITECTS

MEZZANINE FLOOR, THE CALIFORNIAN HOTEL, FRESNO
H. RAFAEL LAKE AND R. F. FELCHIN AND CO., ARCHITECTS

AN INTERESTING INTERIOR, THE CALIFORNAN HOTEL, FRESNO
H. RAFAEL LAKE AND R. F. FELCHN AND CO., ARCHITECTS

WOMEN'S LOUNGE, THE CALIFORNIAN HOTEL, FRESNO
H. Rafael Lake and R. F. Felchin and Co., Architects

GUEST ROOM, THE CALIFORNIAN HOTEL, FRESNO
H. Rafael Lake and R. F. Felchin and Co., Architects

TYPICAL GUEST ROOM, THE CALIFORNIAN HOTEL, FRESNO
H. Rafael Lake and R. F. Felchin and Co., Architects

rounded by drawers and closets. Another "alcove type" sets on top of the built-in drawer sections at a convenient height for use; in all cases there are no legs, and none of the valuable floor space is sacrificed to the kitchen range. This enables the architect to design a kitchen with a smaller free floor space, giving greater convenience and less walking to the ultimate occupant.

Vents are provided for cooking odors only; there being no combustion to the fuel, there are no combustion products to be taken care of.

The illustration shows an alcove installation of an electric range—one of the 107 installed in the kitchens of the Huntington Apartments on California and Taylor streets, San Francisco. These kitchens were especially designed by Messrs. Weeks & Day, architects, to provide the greatest convenience in the smallest amount of space. Each kitchen has a vent leading to a common outlet on the roof where an exhaust fan, continuously operated, removes cooking odors.

The advantages of the electric range from an architect's point of view, are:

> No floor space necessary for the types mentioned, and the easy installation.

From the owner's viewpoint:

> Maximum cleanliness—no soot or grease deposited on walls—kitchens do not have to be redecorated, and are easier kept clean—tenants move less frequently from apartments equipped electrically.

Tenants find cooking electrically, easier than by any other fuel—greater cleanliness appeals to them—there is no sweating of the walls, the food itself is more palatable and the cost is reasonable.

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Architect and Engineer
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Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer, Inc.
PUBLICATION OFFICE:
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828
The publishers disclaim any responsibility for statements made in the advertisements of this magazine.
Terms of Subscription
(Including postage) to all parts of the United States, $2.50 per annum; to Canada 75c additional; to all Foreign points $1 additional
Vol. 80 JANUARY, 1925 No. 1

THE majority of clients have no conception of the amount of work and study required to plan and design a house, nor do they appreciate the fact that their particular problem is not the only one which the architect is handling. Whatever impulses the client has must be registered again and again in changes of the plans, until the very tracing linen upon which they are drawn is worn with erasure holes.—H. V. WALSH, *Architect.*

A FINE BUILDING RECORD

The building permits issued in San Francisco in 1924 aggregate in estimated value close to $60,000,000, which is the highest in the history of the city. The nearest approach to it was $56,578,855 in 1907. The lowest records in recent years were during the war, the nadir being reached in 1918, with permits aggregating but $7,924,319. Since that time San Francisco building has steadily and rapidly increased, both in permanent construction in the industrial and business districts and in frame buildings, which are mostly homes.

The population of San Francisco is much more crowded than formerly, owing to the rapid transfer of women from domestic service to industry and business. Domestic help has become beyond the means of families of moderate incomes, who must flock to the apartment houses, where large families do not develop. Happily, however, there is an expansion of real homes, as evidenced by the remarkable growth of the St. Francis Wood, Westwood Park, Crocker Amazon, Seacliff and Presidio Heights Districts. Architects predict for 1925 a building year equal to if not better than the year just closed.

THE ENGINEER VS. THE ARCHITECT

For those critics who predict that the time is not far distant when the Engineer will supersede the Architect, the following is offered as a convincing argument against any such possibility, the comment having emanated from a contributor to the Architectural Forum, who apparently understands his subject far better than certain writers possessed of opposite views:

Unfortunately for the architect, the value of his services lies along lines that cannot be so readily measured, and the cli nt has little or no appreciation of them. He doesn't realize sufficiently that his building is a vital part of the business, institution, or whatever is housed within it, requiring a distinct, and individual plan to fit the particular needs. This is where the architect's service is superior to the engineer's, and it is the root of all successful building. The various advantages the engineer offers can be provided by any architect capable of creating an organization or intelligent enough to secure expert advice when needed, but the fundamental requirement for good building—the ability to plan—belongs to the architect, and it is something that does not function well in an employee.

The points on which the engineers can and do claim superiority to many architects are just the features of a building operation that are obviously

understood by a client and have, therefore, his immediate interest. He knows that there is a difference between good and bad construction, he knows that there is a difference in cost between different materials; he realizes that good superintendence will insure a better building; he knows that businesslike methods in following contracts and payments will avoid losses, and these are the points of service stressed by the engineer.

Considerations of beauty will always be paramount with architects, but these are difficult of explanation to the public, and when the architect lays greatest stress on this phase of his client's problem, he opens the way for others to approach and make capital of the points he has left uncovered.

IMAGINATION is one of the most enviable possessions of the artist, who may also conceivably be an architect; imagination can lift him from earth to heaven. But for heaven's sake, and for earth's sake, too, do not imagine that a new style of architecture can be invented even by the most gifted student in the full flush of his intuitive perceptions. We are all prone to wish that it could be so, and some, maybe, think it actually possible; but all history teaches the contrary.
—J. ALFRED GOTCH, F.S.A.

PAYING THE FIDDLER

"If you need a thing, you pay for it whether you buy it or not."

In like manner, the owner of every building constructed, pays for the services of a competent architect whether he employs one or not; but with this material difference; when the architect is employed, the owner actually secures value received for the fees paid the architect, but when no architect is retained, the cost of architectural service is absorbed in the quality and character of materials and methods used — the greatest value for the funds expended is not secured.

It has long been recognized as an accepted fact, says the Bulletin of the Illinois Society of Architects, that a building designed and supervised by a competent architect is a better building and a better investment than one where skilled professional services are not secured, the difference in sale value, which is frequently recognized as a measure of real worth, is often much greater than the cost of skilled architectural service. Therefore, the man who builds without an architect, pays for architectural service which he did not secure, but as Barnum said "There is one born every minute".

ENCOURAGING TO BUILDING TRADES

Another triumph for overalls over white collars is reflected in the report that more than 1700 of the 2700 night students at Carnegie Institute of Technology this year are taking courses in the building and machinery trades.

The growth in night student enrollment in these trade courses, which is this year about 100% over that of three years ago, gives further evidence that young men are more and more appreciating the opportunities to win success by the "overall route" rather than through the "white collar" jobs.

Although a majority of the night students enrolled in the trade courses are regularly employed in trades directly or indirectly related to their night studies, attention is called to the fact that a surprisingly large proportion of the students are filling "white collar" jobs in the day time. Many of these are working as draftsmen, tracers, clerks, or timekeepers and are taking trade courses, the report points out, either to shift later to work as tradesmen or to familiarize themselves with more skill in craftmanship in order to progress faster up the ladder of industrial success.

Special significance is seen in the report that 844, or nearly half of the students taking courses in the College of Industries, are enrolled in courses connected with the building trades. This number is also nearly one-third of the total night enrollment for the whole institution.

In the building trade courses the largest group enrollment is reported for the Department of Elec-

trical Equipment and Construction with an enrollment of 174 night students. Next in line is the Carpentry Shop with 121 night students, a registration that taxed facilities to the extent that further enrollments were stopped early in the term. The courses in Plumbing constitute the next highest enrollment in the building trades with 115 students.

SAVING THE REDWOODS

It is a matter of regret that the past year, which marked the first attempt to re-forest the cut-over redwood regions of California, should also have been a record one for forest destruction by fire. If we were a primitive people, we would have read something sinister into this coincidence; likely as not, terrifying ourselves with the idea that Moloch, the god of fire, enraged at our puny attempts to set at naught his destruction, was warning us to desist from our endeavors to again clothe the hillsides.

But happily, we are not a primitive people and it may be assumed as a matter of course that those most interested in our forests will gird up their loins and enlarge the protective scope as a result of the fire-god's admonition.

Last year 300,000 seedlings from the nursery of the Union Lumber Company at Fort Bragg, Mendocino county, were spread over 585 acres; this year, 800,000 saplings will be planted on 1600 acres, and the following year 1,500,000 young trees go toward the re-foresting of 3,000 acres. Thus do the redwood lumbermen answer the warning of destruction.

It is obvious that these lumbering interests, banding together as the Redwood Fire and Protective Association, are forwarding their own interest in the task they have set for themselves. But, in the final analysis, they are doing much more than this: they are performing a public service. To say that in fifty years they will reap a fair harvest in lumber from their efforts is beside the mark. But to think of their labors in terms of beauty as well as utility, will serve the purpose better. Timber builds homes and serves industry, but it also preserves streams and cool restful retreats for fagged humanity; it shelters game; it protects the flowers, and it tempers climate.

BOOK REVIEWS

Edited by
CHARLES PETER WEEKS

More Good Books

We again have occasion to congratulate Pencil Points, 19 E. 24th street, New York, on its publications. "Good Practice in Construction", by Philip G. Knobloch; "Sketching and Rendering in Pencil", by Arthur L. Guptill; and "Architecture Toscane" are recently published works of exceptional merit.

"Architecture Toscane" combines in one volume, drawings of exteriors and plans of the best Italian precedents in such a form that as a check on proportion of detail and character of style, it is a valuable reference book.

"Sketchings and Rendering in Pencil" thoroughly covers the subject and should be of help to all architectural draftsmen.

"Good Practice in Construction" combines, in one handy book such information as was formerly presented in Snyder's volumes on a similar subject. Snyder's volumes, however, were unwieldy to handle and difficult to file. The details are practical ones and should improve the work in architects' offices.

* * *

"English Precedent for Modern Brickwork" edited and published by The Architectural Forum for The American Face Brick Association, 130 N. Wells street, Chicago, price $2.00. The charm of English brick work is in the method of doing and the detail of the work. Numerous photographs, drawings, etc., illustrate this type of English architecture in a beautiful and highly useful manner.

Architects Have Library

The Allied Architects' Association of Los Angeles has leased a suite of rooms in the Citizens National Bank building for a library of art and architecture. Through purchase and donation the association now has about 1000 volumes. The library rooms are being remodeled and equipped and will be opened about the first of the new year. During the year the association expects to establish the first of its traveling scholarships which are to be supported from the treasury of the association.

With the Architects

Building Reports and Personal Mention

Competitions for Rome Fellowships

The American Academy in Rome has announced its annual competitions for Fellowships in architecture, painting, sculpture, musical composition and classical studies. These Fellowships will be awarded after competitions, which, in the case of the Fine Arts, are open to unmarried men who are citizens of the United States; in classical studies, to unmarried citizens, men or women. It should be noted that in painting, sculpture and musical composition there is to be no formal competition involving the execution of work on prescribed subjects, but these Fellowships will be awarded by direct selection after a thorough investigation of the artistic ability and personal qualifications of the candidates. Applicants are required to submit examples of their work and such other evidence as will assist the juries in making the selections.

For each Fellowship in the Fine Arts the stipend is $1,000 a year for three years; in classical studies there is a Fellowship for one year with a stipend of $1,000 and a Fellowship paying $1,000 a year for two years. All Fellows have opportunity for travel, and Fellows in musical composition, of whom an extra amount of travel is required in visiting the leading musical centers of Europe, receive an additional allowance of $1,000 a year for traveling expenses. In the case of all Fellowships, residence and studio (or study) are provided free of charge at the Academy.

Entries will be received until March first. For circulars of information and application blanks, address Roscoe Guernsey, Executive Secretary, American Academy in Rome, 101 Park Avenue, New York City.

Architects Support Move by Contractors

Interesting evidence of the highly valuable results that arise from a co-operative spirit between contractors and architects is found in a report recently submitted to the Milwaukee unit of the American Institute of Architects by its Committee on Specifications, Contracts, Building Code and Fire Protection.

The report of the committee follows:

"At the last meeting of the Chapter, the General Contractors Association submitted a request that the Wisconsin Chapter cooperate with them in eliminating an evil which has caused considerable trouble for architects, contractors, and owners, namely, that many architects prepare their working plans in pencil at ⅛ inch scale, which soon smudges, and becomes illegible, and that the blueprints therefrom are even more illegible than the original—and they ask that all architects furnish them with clear and legible blueprints to work from. They also state that they will refuse to bid on such drawings in the future.

"This matter was referred to the Committee on Specifications, Contracts, Building Code and Fire Protection.

"Your committee begs to report that they endorse the stand taken by the General Contractors Association of refusing to bid on illegible drawings and request that all members of the chapter exercise the utmost care in providing contractors with drawings that are clear and legible and properly developed.

"Your committee takes this opportunity to state that it considers it the duty of every architect to provide clear and legible drawings and carefully prepared specifications for all work that is entrusted to their care, and that no architect can offer a valid excuse for not doing so."

Landscape Architecture Exhibit

The Southwest Museum of Los Angeles announces that the second annual exhibit of landscape architecture will be held at the Southwest Museum in February, under the auspices of the Pacific Coast Chapter of the American Society of Landscape Architects, and is open to all professional landscape architects who subscribe to the conditions of the exhibit.

The jury of awards will consist of five members, two of whom will be landscape architects; one an architect, and two others of recognized ability in allied professions. The jury of awards will base its decisions, primarily, on distinctive merit in design—particularly toward solving landscape problems, and no awards shall be given unless, in the judgment of the jury, the exhibit is proved worthy of high commendation. It is necessary that exhibitors present such topographical data as will aid the jury to understand the problems presented in the aspects of grading, constructional and functional aims.

Those desiring to exhibit should communicate with Mrs. M. Barbara Dacier, Southwest Museum Extension, 410 Bradbury building, Los Angeles.

Annual Meeting Coast Chapter, A.S.L.A.

The annual meeting of the Pacific Coast Chapter, American Society of Landscape Architects, was held at the offices of Messrs. Cook and Hall, landscape architects, Los Angeles, December 22, 1924. The meeting was called to order by the retiring president, Mr. Wilbur D. Cook, who has served the Chapter in this capacity for the past six years, giving generously of his time and effort, ever since the foundation of the Chapter in Washington, D. C., during war time in 1918, where several active Californian members of the parent society were then engaged in war work.

The Chapter has now increased its membership five-fold with representatives not only engaged in Landscape Architecture and City Planning effort in and around Los Angeles, but San Francisco, Berkeley and Sacramento.

Important amendments to the by-laws were made at this meeting, the Chapter having the privilege of the thoughtful efforts in this regard of Mr. F. L. Olmsted, now a member of the local organization and for many years president of the American Society of Landscape Architects.

The election of officers for the ensuing year resulted as follows:

President, Mr. Stephen Child, 538 Merchants Exchange building, San Francisco.

Vice-President, Mr. Emanuel T. Mische, City Hall, Long Beach.

Treasurer, Mr. Daniel R. Hall, 603 I. W. Hellman building, Los Angeles.

Secretary, Mr. George D. Hall, 663 I. W. Hellman building, Los Angeles.

President Child, in accepting the office, after expressing his appreciation of the honor, emphasized a number of ways by which the Chapter could be of service to the community. Among these was the support of the movement now under way for securing a new or revised State Zoning Enabling Act—one that would provide for a Board of Appeals.

Another was the support of the Regional Planning Movement in California; a movement now well started in Los Angeles, where it has had active endorsement of the Chapter and the benefit of effective work by several members. Similar endorsement and support was pledged to the newly begun Regional Planning efforts for San Francisco and the Bay District.

Electric Company Moves

The Benjamin Electric and Manufacturing Company have moved to new quarters at 448 Bryant street, San Francisco, where they occupy over 11,000 feet of floor space with offices, display room and warehouse combined. This company manufactures electric lighting specialties, wiring devices, panel boards, enamel steel reflectors, etc. Mr. Miles F. Steel is manager of the Pacific Coast district.

Passing of Edgar Blair, Architect

Edgar Blair, architect and builder, died in Seattle, Wash., where he practised his profession, the early part of November, his passing coming as a shock to his wide circle of friends. At the time of his death Mr. Blair was editor of the "Washington State Architect", the official organ of the Washington State Society of Architects of which Mr. Blair was a former president. As school architect in Seattle, he designed the Franklin, West Seattle, Ballard, Lincoln Annex, Broadway Annex high schools and thirty-two grammar school buildings.

Edgar Blair was born in Des Moines, Iowa, January 15, 1871, attending grade and high schools in that city; after which he worked two years in the greenhouses with his father.

He entered the architectural offices of Clinton Nourse in Des Moines, and realizing the need of education, went to Des Moines college. For his technical education he attended Columbia University, arriving in New York with sixty dollars.

The first year he earned his way tutoring what he termed the lazy boys, the second year a scholarship helped; after that he worked over the drawing board in the office of McKim, Mead and White; Partridge, and others, earning his way as he progressed.

Always a seeker of knowledge, he then began the rounds of the offices of the biggest men he could find, working for them in what was to him a post course.

From New York he went south, working for Baldwin and Pennington in Baltimore, designing many of the buildings after the Baltimore fire.

His acquaintance with the big figures in architecture was a happy one. In 1902 he became one of the firm of Mayre & Wright, in Washington, D. C., designing the Atlanta Terminal station and the Richmond, Va., prison.

In 1904, in business for himself, he brought forth the Champlain Apartments, in Washington, D. C., for Senator Proctor. This structure of snowy white marble, is still one of the show buildings of that beautiful city.

In 1907 he married Mary A. Fox, of Elizabeth, New Jersey and Washington, D. C., then private secretary to William S. Penfield, Solicitor of State and official representative for the United States at The Hague.

Arriving in Seattle in February, 1906, the first office he entered was that of James Stephen. He was employed with Mr. Stephen for three years, designing schools.

In 1909 the school board insisted on a man giving full time to school work. Mr. Blair was then appointed school architect, retaining the place continuously for nine years.

Personal

Architect Clifford Truesdell has started on an extended tour of the world and will be away for about two years. During his absence the business of the firm, Truesdell & Newton, architect and engineer, will be conducted by Mr. H. C. Newton, 301 San Fernando building, Los Angeles.

Announcement is made by Messrs. Paul R. Cowles and John P. Perrine of a co-partnership operating under the name Cowles-Perrine Organization, with offices at 742 S. Hill street, Los Angeles.

Mr. B. F. Jakobsen, consulting engineer of San Francisco, engaged as assistant engineer on Los Angeles county flood control work, has been awarded the Norman medal of the American Society of Civil Engineers for exceptional work in figuring stresses on dams, which the society regards as the greatest contribution to engineering during the last year.

Maj. John A. Griffin, former city engineer of Los Angeles, has opened an office at 937 W. Seventh street, Los Angeles, for private practice as consulting engineer, specializing in municipal problems.

Mr. H. D. Dewell, structural engineer of San Francisco, has been invited by the city authorities of Sacramento to make an inspection of the Municipal filtration plant with a view to submitting a report on its structural sufficiency. It is stated the expense of this survey and report will amount to between $5000 and $7500.

The architectural firm of Wyckoff & White, of San Jose, has been dissolved and Mr. Ralph Wyckoff will continue to practice independently with offices in the Growers Bank building. Mr. Hugh C. White has established offices at 819 Syndicate building, Oakland, and will be pleased to receive catalogues and manufacturers literature.

Architect James W. Plachek of Berkeley has moved his offices from 2014 Shattuck avenue, Berkeley, to the Mercantile Trust building, in the same city.

Architects Johnson, Kaufmann and Coate have dissolved partnership by mutual consent and each member of the firm will continue to practice the profession independently. All three will have offices in the Union bank building, Los Angeles, as heretofore.

Mr. George L. Dahl, an architect who has been identified with a number of the leading architectural firms in the East, including Messrs. Long, Lamereaux and Thorshor of Minneapolis and L. C. Farnam of the same city, is a recent arrival in San Francisco. He is seeking an agreeable association with some California firm of architects. Mr. Dahl is temporarily stopping at the Lankershim Hotel, San Francisco.

Mr. Chester P. Cahoon, general manager of the Salt Lake Pressed Brick Company of Salt Lake City, Utah, was a recent visitor at the San Francisco Builders' Exchange.

Architecture Attracts Easterners

"For residential architecture California is rapidly becoming the fashion plate of America. This is largely due to the superior plastering that is done in that locality," says a writer in the Metal Lath News, organ of the Metal Lath manufacturers. "Architects have not restrained themselves on the question of color either for exterior or interior plastering.

"Bertram Goodhue once said that architecture depended upon three elements, design, texture and color and like a three legged stool would fall, if one leg was removed.

"A happy combination of these three elements is best seen in the California residential architecture but cannot be appreciated without an actual visit, because the printing art has not advanced to such an extent that either texture or color can be adequately represented on the printed page. Some California designs seem overdone when reproduced in black and white alone, while in fact color and texture act like alchemy in transmitting them into architectural beauty.

"The people who are buying these houses and are moving to California, attracted in part by the architectural beauty of the cities, are the same persons who would have been clients of Eastern architects had they studied to make the Eastern cities as attractive as the residential sections of Californian cities. These residences are not peculiar—they are only advanced to the state where color, texture and design are all employed."

Delegates to Convention

Southern California Chapter A. I. A., has elected the following delegates to the 1925 Institute Convention: Messrs. Sumner P. Hunt, Edwin Bergstrom, Reginald D. Johnson, Myron Hunt, Harwood Hewitt, Donald B. Parkinson, and Fitch H. Haskell. Alternates elected are: Messrs. A. M. Edelman, Winsor Soule, Sumner M. Spaulding, A. C. Zimmermann, W. Templeton Johnson, Henry F. Withey and Carleton M. Winslow. The Chapter will have nine representatives at the Convention.

Death of Mr. C. P. Smith

Mr. C. J. Simth, honorary member of the Washington State Chapter, A. I. A., passed away at his home in Seattle in November. Mr. Smith was chairman of the Building and Grounds Committee of the Alaska-Yukon Pacific Exposition and has work in the interest of art and the architectural profession will be a distinct loss to the State of Washington.

Construction Projects Abroad

Contributed by U. S. Department of Commerce, Washington

SOLVE HOUSING PROBLEM

Houses are being constructed at Glasgow of wooden framework with steel sheeting exteriors and interiors of wall board according to Trade Commissioner Mitchell at London. It is claimed that a five room house of this construction can be built for about $1,350 in a short space of time by unskilled labor.

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BUILDING PROJECTS IN SCOTLAND

Building permits for the year ending October, 1924, amounted to an increase of more than 100 per cent over the previous year, according to Consular advices to the Department of Commerce from Dunfermline. A considerable portion of the work authorized has not yet commenced, owing to the high prices of materials.

In the construction work of the past year a number of the concrete houses have been built after plans and specifications of similar houses in Detroit and other American cities. American hardwood and lumber have also been used in many buildings.

* * *

SMALL HOME CONSTRUCTION

A Belgrade division of the State Railways of Servia contemplates the construction of 200 houses, over half of which will be small two room dwellings equipped with modern conveniences, according to Consular advices to the Department of Commerce from Belgrade. The houses will be constructed of brick, stone, and cement and will necessitate the installation of a water system, streets, sewerage, and lighting.

* * *

LOW PRICED HOUSES IN SPAIN

Cheap houses constructed on plans agreed upon by the Spanish Government are being built in Spain, such construction being encouraged by favorable Government loans available to builders, according to report to the Department of Commerce from Consul A. W. Ferrin, Madrid. The home owners is expected to greatly increase the new Government decree providing for loans to building of cheap houses not only in Madrid but in all of Spain.

* * *

CEMENT PLANT IN BRAZIL

Preparations are being made for the construction of a large cement factory in the city of Rio Grande, state of Rio Grande do Sul, Brazil, Assistant Trade Commissioner Cremer, Rio de Janeiro, informs the Department of Coommerce. The company building the plant will be capitalized at 10,000 contos (about $1,150,000), of which half is to be obtained by public subscriptions, and the remainder will be in the form of loans from the Government.

* * *

COTTON TEXTILE MILL

A concession has been awarded for the erection of a textile mill in a city in Brazil which will use cotton waste and other cotton residue as raw materials. The concession includes the exemption from all State taxes for a period of five years and a 60 per cent reduction in the State export tax.

* * *

CANADIAN DEPARTMENT STORE

A large department store in Vancouver, British Columbia, will shortly build an addition which, with the existing building, will cover an entire block of land, Trade Commissioner Meekins, Ottawa, states. The estimated cost of the undertaking will be $1,500,000.

Position Wanted

MR. ARCHITECT: Will you exchange references with an architect who has had considerable technical office experience in California and in the East. He is practical in several lines of the building trades and has been superintendent, chief draftsman, specification writer and office manager, and is now seeking larger opportunities.

Wanted: Engineer to occupy office with architect. Apply Room 621. 1404 Franklin St., Oakland.

Los Angeles Builders Convention

Mr. George L. Eastman, chairman of the executive committee, has announced the official itinerary of the fourteenth annual national convention of the National Association of Builders' Exchanges to be held in Los Angeles, February 23rd to February 27th inclusive. Between two and three thousand delegates with their families are expected to attend.

When the special train carrying the delegates arrives at Riverside, Monday, February 23rd, they will be met by members of the reception committee and the entertainment of the visitors will start at this point with a De Luxe auto tour through Riverside, Redlands, Smiley Heights, Mt. Rubidoux and other places in the vicinity. Luncheon will be served at the Mission Inn in Riverside.

The delegates will be shown several other places of interest and then brought to the convention headquarters at the Biltmore Hotel.

A special night session will be held Tuesday the 24th in addition to the regular sessions on Wednesday during the morning and afternoon. In the evening the annual banquet at the Biltmore will take place.

Thursday will be confined entirely to entertainment, starting with a trip to the harbor and a ride on city tugs. Luncheon will be served at the Southern California Yacht Club after which a caravan of autos will take the visitors through Santa Ana and vicinity.

The visitors leave Friday for San Francisco where they will be suitably entertained.

Reinforcing Bar Standard Sizes

In accordance with the unanimous action of the joint conference of representatives of manufacturers, distributors and users of square and round steel reinforcing bars, the United States Department of Commerce, through the Bureau of Standards, recommends that the recognized sizes of square and round steel reinforcing bars, in terms of cross sectional area, be reduced to the following:

Area in Square Inches	Size in Inches
.049	¼ Round
.110	⅜ Round
.196	½ Round
.250	½ Square
.307	⅝ Round
.442	¾ Round
.601	⅞ Round
.785	1 Round
1.000	1 Square
1.266	1⅛ Square
1.563	1¼ Square

Every effort will be made to clear current orders and existing stocks of the eliminated areas before March 1, 1925.

Roofing Problems

Edited by J. I. HOLDER

Announcing a New Department

Next to the foundations the roof of a building requires the most expert planning. A poor foundation weakens the superstructure and may lead to failure of the entire design. A defective roof is worse than no roof at all. It means endless trouble and expense alike for architect, builder and owner.

In announcing a Roofing Department it is not the purpose of the publishers of this magazine to advocate therein any particular style or type of roofing. While the Editor of the department frankly admits he is best posted on roofing of the composition built-up type and is associated with a company that manufactures this kind of roof, experts in other types of roofing, such as terra cotta tile, slate, shingle and tin, will be asked to answer any questions that the reader may wish to have solved—in short it will be the aim of this department to make it a real benefit and help to those who may feel the need of such assistance.

Correspondence on the subjects of roofing, flashing, waterproofing, dampproofing, etc. is invited and these inquiries will be considered confidential if the correspondent so requests.

Before his appointment as director of the Engineering department of The Paraffin Companies, Inc., Mr. J. I. Holder, who is to have charge of this department, was connected with the Barrett Company at which time he also served as secretary-treasurer of the National Association of United Roofing Contractors. Recognized as an expert on composition, prepared, built-up roofings, flashings, damproofing and waterproofing problems, Mr. Holder is the author of numerous articles on these subjects, and has given frequent talks and lectures before architectural and engineering societies and architectural and engineering classes in universities and colleges.

To Extend Home Ownership

"Had the Russian peasants owned their own homes and farms, the Bolshivic terror could not have swept that country."

This is the statement of Mr. David Woodhead, Los Angeles lumberman, and head of the Tax Relief Association of California, 502 Delta building, Los Angeles, proponents of the proposed "home-builders" constitutional amendment which will be presented to the legislature in January.

Mr. Woodhead declares extension of home ownership will give increased security to the rights of private property, the ideal condition being a population 100 per cent home owners. The wealthy landowner will also benefit from this increased security, says Mr. Woodhead, even though his taxes will be somewhat increased.

A bill is now being prepared for submission to the California lawmakers calling for an amendment measure to be submitted to the voters of the state. The amendment proposes the abolition of the personal property tax, and the exemption of $2000 worth of improvements on land to each individual taxpayer.

Good Year for Cement Company

At the annual meeting of the Old Mission Portland Cement Company of San Francisco the stockholders and directors evidenced their satisfaction with the way the affairs of the company are running by re-electing the outgoing board of directors and the retiring officers, headed by Mr. William F. Humphrey.

In making his annual report Mr. J. A. McCarthy, vice president and general manager of the company, said:

"The cement business is good generally throughout the country and California and the Pacific Coast is getting their share. General indications point to continued building activitity around all the bay cities and the development down the peninsula is strikingly apparent. This condition assures a ready market for the company's product in 1925."

Washington State Architects

Architect Roy D. Rogers, of Seattle, has been elected president of the Washington State Society of Architects. Other officers elected are: Messrs. Frederick J. Peters, first vice president; Julius A. Zittel of Spokane, second vice president; J. L. McCauley, third vice president, and T. F. Doan of Bellingham, fourth vice president. The board of trustees includes Messrs. Harry H. James, four-year term; Theo Buchinger, three-year term; Charles W. Saunders, two-year term. W. C. Jackson was elected secretary-treasurer.

How to Make Watertight Concrete

CONCRETE made from properly selected aggregates, combined with Portland cement in suitable proportions, when thoroughly mixed to the right consistency, carefully placed, and adequately protected during early hardening, will be watertight under all ordinary conditions.

Watertight concrete means good concrete. A few fundamental principles of good construction should be:

1. All portions of the structure should be strong enough to resist the head of water, either internal or external, to which the concrete may be subjected.
2. Use clean, well graded aggregates.
3. Use a relatively rich mixture, a 1:2:3, or better 1: 1½: 3.
4. Use the minimum amount of mixing water that will give a workable, plastic consistency; not over 5 imperial gallons per sack of cement.
5. Mix the concrete thoroughly, at least 1½ minutes per batch mixer.
6. Place the concrete carefully in layers 6 to 12 inches deep, spading or rodding it thoroughly to prevent the formation of stone pockets or voids.
7. If possible place the concrete in one continuous operation to avoid construction joints. If placing is interrupted, be sure to get a good bond between the fresh concrete and that placed previously.
8. Keep the concrete warm and damp for the first ten days.

In tests conducted by the U. S. Bureau of Standards, thin slabs of a lean (1:6) Portland cement mortar and 1 : 1½ : 2 concrete were subjected to a water pressure of 60 pounds per square inch. This pressure is equivalent to a 138-foot head of water. Although water penetrated through 1⅝ inch limestone slabs in periods ranging from 20 seconds to 20 minutes, it took 3½ hours for water to penetrate through a two-inch slab of 1: 6 mortar, while at the end of 24 hours, when the test was terminated, the two-inch slab of 1: 1½: 2 concrete was still dry.

Hundreds of concrete tanks are being used for the storage of fuel oil, which is lighter than water, and these tanks are oil tight, and of course watertight. Concrete basements, pits, bridges, and tanks will also be watertight if proper care is taken in their construction. Experience and tests have shown that proper practice will make watertight concrete.

Building to Have Shock Absorbers

The following paragraph is a high light from the discussion recorded in the proceedings of the tenth annual meeting of the Building Officials Conference held at Louisville, Ky. The discussion which led up to it pertained to stresses induced in tall buildings by wind pressure and the provisions to be made in the design for wind bracing in such tall buildings.

It is only within a week that I read of a building designed for San Francisco that is going to be built to guard against earthquake shocks. The foundation is to be of reinforced concrete covered with steel plates. Then on top of the steel plates are to be placed steel rollers extending in both directions; on top of the steel rollers another steel disc is to be placed and on top of the steel disc they will erect the building. It is also going to be provided with "shock absorbers".—F. W. Lumis, Inspector of Buildings, Springfield, Mass.

Mr. Snyder Honored

Mr. C. H. Snyder, San Franisco structural engineer, has been appointed by the Sacramento city commissioners, structural engineer of the Sacramento municipal auditorium, succeeding Mr. Geo. J. Calder, resigned. Mr. Snyder was appointed on recommendation of City Manager M. C. Bottorff, of Sacramento. Mr. Snyder is one of the best known structural engineers on the Pacific Coast, having designed the structural plans for many of the most prominent buildings in San Francisco and the Bay Region, including the following: San Francisco City Hall; Pacific Gas and Electric buildings; University of California hospital; Lane Hospital, San Francisco; Sutter Hospital, Sisters Hospital and Sacramento County Hospital, Sacramento; Santa Fe Station, San Diego; Elks' Club, San Francisco and twenty-five school buildings in San Francisco.

Two Companies Merge

Gunn, Carle & Co., San Francisco, has announced its purchase of the business of the Pacific Materials Co., effective January 1, 1925, which it will continue to conduct under the management of Mr. O. P. Shelley, who retains his interest as vice-president and manager.

Offices and warehouse will be merged with offices and warehouse, respectively, of Gunn, Carle & Co., both of which are being enlarged to accommodate the business of what now becomes its subsidiary corporation.

To the valued customers of both companies, now affiliated, is pledged an adherence to quality standards of materials.

The offices of Gunn, Carle & Co. are at 444 Market street, San Francisco.

To Light City Hall Dome

Mr. Ralph Wiley, chief of the Department of Electricity, estimates the cost of illuminating the dome of the San Francisco city hall at $10,000. The Board of Public Works will shortly ask bids for the electrical installations.

Resigns Position

Mr. W. Henning, for several years associated with the Clinton Construction Company, San Francisco and Los Angeles, has resigned, and plans to enter the contracting business for himself.

1925 Building Outlook in San Francisco Bay Region

ARCHITECTS throughout the state of California are optimistic over the building outlook for 1925. San Francisco enjoyed a record year in 1924 yet indications are that 1925 will eclipse the previous twelve months. In the Bay District reports from architects indicate there will be from fifty to sixty million dollars worth of construction work this year. These figures are for buildings and it may be added that fifty million more will probably be expended on bridges and highway work. The following is a list of the more important projects:

PUBLIC BUILDINGS

War Memorial Municipal Opera House, Civic Center; Bakewell & Brown & G. A. Lansburgh, architects $2,000,000

Phoebe Hearst Memorial Gymnasium, Berkeley, Wm. R. Hearst, donor, Bernard Maybeck & Julia Morgan, associated architects, Merchants Exchange building ..... $500,000.

Boxing Arena, Guerrero street, Louis R. Lurie and Associates, owners; Weeks & Day, architects, R. McLeran & Co., contractors ..... $300,000.

New School buildings designed by the following architects (others to be named from time to time) G. A. Lansburgh, Bakewell & Brown, Meyer & Johnson, Weeks & Day, Joseph & Stone, John Galen Howard ..... $12,000,000.

OFFICE BUILDINGS

Eight-story Class A, Sansome, near California street, Fireman's Fund Insurance Co.; Weeks & Day, architects, MacDonald & Kahn, builders ..... $300,000.

Six-story Class B, newspaper building, Mission near 4th street, for San Francisco Bulletin, Ashley & Evers, architects ..... $500,000.

Four-story Class A, office building, Van Ness avenue and Hayes street, for California State Automobile Association, George W. Kelham, architect, H. J. Brunnier, engineer ..... $250,000.

Sixteen-story Class A, bank and office building, Broadway and 14th street, for Central National Bank, George W. Kelham, architect .... $1,250,000.

Twelve-story Class A, physicians and dentists' building, 19th and Franklin streets, Oakland, Wythe, Blaine & Olson, architects, Chas. W. Heyer, Jr., builder ..... $700,000.

Twelve-story, reinforced concrete store and office building, Market and Fulton streets, San Francisco, for F. W. Leis; Powers and Ahnden, 460 Montgomery street, San Francisco, architects ..... $350,000.

Six-story reinforced concrete office and loft building, Bryant, Fremont, Beale and Brannan streets, San Francisco, Baker-Hamilton-Pacific Co., Weeks & Day, architects ..... $1,000,000.

HOTELS

Reinforced concrete Spanish type hotel, for Del Monte Properties Co., Del Monte, Monterey Co., Lewis P. Hobart, architect ..... $1,000,000.

Six-story Class A, Jones and Eddy streets, San Francisco, A. Vayssie, owner; Fabre & Hildebrand, architects, (contract let) ..... $300,000.

Fifteen-story Class A, addition to Hotel Clift, Geary and Taylor streets, San Francisco, Schultze & Weaver, architects; P. J. Walker Co., builders, 55 New Montgomery street, San Francisco. ..... $1,500,000.

Four-story Class A addition to Hotel Californian, Taylor and O'Farrell streets, San Francisco; E. E. Young, architect, M. A. Little, owner and builder ..... $250,000.

Sixteen-story Class A, store and hotel, 8th and Market streets, San Francisco, Rousseau & Rousseau, architects and owners ..... $1,500,000.

Five-story Class A, hotel, 15th and Harrison streets, Oakland, for Coit Investment Co., Leonard H. Ford, architect, 306-14th street, Oakland (contracts being awarded) ..... $500,000.

Three-story English type hotel, Los Gatos, for L. Vincent Gaffney and Associates; Shea & Shea, architects ..... $500,000.

Four-story concrete store and hotel, Burlingame, Kuhn & Edwards, architects, Commercial building, San Francisco ..... $150,000.

Four-story reinforced concrete hotel, state highway, Burlingame, for Mr. Van Horn and Associates, Geo. Rushforth, architect ..... $600,000.

Eight-story Class B, southeast corner of 17th avenue and Geary street, San Francisco, for E. V. Fachs; S. Heiman, 57 Post street, San Francisco, architect ..... $350,000.

Class A theatre, Market, Hayes and Polk streets, for Caroline Kutner and Associates, N. W. Mohr, architect (prospective) ..... $5,000,000.

Ten-story Class A, Turk street, near Leavenworth street, San Francisco, for International Y. M. C. A., International Building Bureau, 347 Madison avenue, New York, architects $1,000,000.

Twelve-story Class A, site to be selected in Oakland, for Judge E. A. Colburn, 416 East 10th avenue, Denver, Colorado; Wm. M. Bowman, architect, Denver, Gordon M. Tamblyn, contractor, Denver ..... $5,000,000.

CLUB BUILDINGS

Eight-story Class A, Army Y.M.C.A., Embarcadero, Carl Werner, architect; T. Ronneberg, engineer ..... $800,000.

Three-story reinforced concrete Y.M.C.A. building, Chinatown, Meyer & Johnson, architects, ... $200,000.

Shrine Temple, Oakland, Carl Werner, architect ..... $1,000,000.

Additions to Masonic Temple, Van Ness avenue, San Francisco, Carl Werner, Santa Fe building, San Francisco ..... $500,000.

Club building, Del Monte, Clarence A. Tantau, architect ..... $100,000.

Eleven-story Class A, club and hotel, Mason and Sutter streets, San Francisco, Women's Federated Club, Bliss & Faville, Balboa building, San Francisco, architects ..... $1,250,000.

Two-story Class A, addition to six-story building, Olympic Club, Post street, near Mason street, San Francisco; Bakewell & Brown & John Baur, 251 Kearny street, San Francisco, architects ..... $500,000.

Club buildings, grandstand, etc., California Lawn Tennis Club, Sutter street, San Francisco, Nathaniel Blaisdell, architect ..... $100,000.

Club building for Fairmede Country Club, state highway, Alameda Co., near Richmond; Gwynne Officer, architect ..... $100,000.

BANK BUILDINGS

Two-story Class A, bank building, Market street, between Montgomery and Kearny streets, San Francisco, for Crocker National Bank, Lewis P. Hobart, architect; T. Ronneberg, engineer. ..... $500,000.

Bank buildings to be built by the Bank of Italy, in Stockton, San Jose, Berkeley, etc., H. A. Minton, architect ..... $500,000 or more.

Two-story addition to Mercantile Trust Co., San Jose ..... $100,000.

One-story concrete building, Alvarado, for the Bank of Alameda County, Hermann Safe Co., designers ..... $30,000.

Central Bank building, Oakland (see office buildings).

Two-story Class A, bank building, Sacramento, for United Bank and Trust Co., C. E. Gottschalk & M. J. Rist, architects ..... $250,000.

Two-story brick bank and office building, San Mateo for the Wisnom Co., W. H. Weeks, architect ..... $75,000.

One-story reinforced concrete and terra cotta bank building, Red Bluff, for the First National Bank of Tehama City, W. H. Weeks, architect. ..... $75,000.

One-story reinforced concrete bank building, Ventura, for First National Bank, Ventura, H. H. Winner, designer, Sharon building, San Francisco, ... $100,000.

Also one in Petaluma, for Sonoma County bank ..... $100,000.

APARTMENTS

Twelve-story reinforced concrete apartments, facing Lake Merritt, Oakland, for George Jamieson and Associates, M. I. Diggs, architect $750,000.

Ten-story Class B, apartments, Mason and Sacramento streets, San Francisco, for Mrs. M. V. B. McAdam, Weeks & Day, architects ..... $1,000,000.

Eight-story apartments, Mason and Sacramento streets, San Francisco, for Eugene Fritz, Edw. E. Young, architect ..... $260,000.

Twelve-story community apartments, Jackson and Steiner streets, San Francisco, Henry C. Smith, architect (steel contract awarded) $400,000.

Seven-story steel frame apartments, Hyde street, near Greenwich street, San Francisco, C. A. Meussdorffer, architect (contracts let) $250,000.

Three-story frame apartments, Baker and Filbert streets, San Francisco, for Stock & Jose, Baumann & Jose, architects ..... $60,000; also

Three-story apartments, Post and Hyde streets, San Francisco, for Louis Stoff, Baumann & Jose, architects ..... $125,000; also

Three-story brick veneer apartments, Dolores and Clipper streets, San Francisco, for Ernest Johnson, of Burlingame, Baumann & Jose, 251 Kearny street, San Francisco ..... $50,000.

THEATRES

Two-story Class A, Grand avenue, Oakland, for A. C. Karski; Reid Bros., architects ..... $250,000.

Class A theatre, Thousand Oaks, Berkeley, for M. Blumfeld; Reid Bros., architects ..... $100,000.

Class A theatre, Fruitvale avenue, Oakland, for West Coast Theatres, Reid Bros., architects ..... $100,000.

Class A theatre, Fresno, for L. W. Wilson and J. A. Benham, Shields, Fisher & Lake architects and builders ..... $600,000.

Concrete and brick moving picture theatre, Park boulevard and 19th street, Oakland, for Golden State Theatres Co., Mark T. Jorgensen, architect ..... $150,000.

Class A theatre, Irving street, San Francisco, for Golden State Theatre Co., Mark T. Jorgensen, architect ..... $250,000.

Moving picture theatre in West Portal, St. Francis Wood, San Francisco, for B. Getz; Morrow & Garren, architects ..... $60,000.

Class B, theatre, Bancroft way, near Telegraph avenue, Berkeley, for Frank Atkins, James T. Narbett, Richmond, architect ..... $100,000.

Steel and concrete theatre, East 14th street, Oakland, for Golden State Theatres Co., A. W. Cornelius, architect ..... $200,000.

Class A, Orpheum Theatre, Los Angeles, G. A. Lansburgh, 140 Montgomery street, San Francisco, architect ..... $1,000,000.

Class A, theatre, Market and 12th streets, San Francisco, for Ackermann & Harris, architect not yet named ..... $1,000,000.

Reconstruction of T. and D. Theatre, Watsonville, which was destroyed by fire, Wm. H. Weeks, architect, 369 Pine street, San Francisco ..... $100,000.

Class A, theatre, Crocker Amazon Tract, Mission and Rolph streets, for Golden State Theatre and Realty Co.; Mark T. Jorgensen, 110 Sutter street, San Francisco, architect ..... $150,000.

INDUSTRIAL BUILDINGS

Oil distributing plant for General Petroleum Company at Islais Creek, on property leased from the State Harbor Commission, including operating buildings, tanks, pipe lines, etc. ..... $250,000.

Completion of final unit of terminal warehouses for Alaska Packers Association, Alameda waterfront, Phillip Bush, engineer, 101 California street, San Francisco ..... $500,000.

Factory for the White Motor Truck Co., 11th and Mission streets, San Francisco; Henry H. Gutterson, architect; H. J. Brunnier, engineer ..... $400,000.

Factory and warehouse for John A. Roebling & Sons Co., 16th and Carolina streets, San Francisco, F. W. Quandt, architect ..... $250,000.

Two-story concrete warehouse for the Knapp Metal Barrel Co., Parr Terminal, Oakland ..... $100,000.

Four-story reinforced concrete addition to Schmidt Lithograph plant, under construction at 2nd and Brannan streets, San Francisco, R. McLeran & Co. ..... $400,000.

Oil distributing plant and 40 or more gasoline and oil stations, San Francisco and Oakland, for the Pan American Petroleum Corp., Security building, Los Angeles ..... $1,500,000.

Oil distributing plant, Parr Terminal, Oakland, for the Richfield Oil Co., Van Nuys building, Los Angeles ..... $100,000.

Factory, warehouse, shipping department, etc., 7th and Bay streets, Oakland, for H. J. Heinz Corp., 217-2nd street, San Francisco, G. F. Mason, manager ..... $1,000,000.

Group of factory buildings, varnish plant and warehouse, block bounded by Army, De Haro, Kansas and Main streets, San Francisco, for the Bass-Hueter Paint Co. ..... $500,000.

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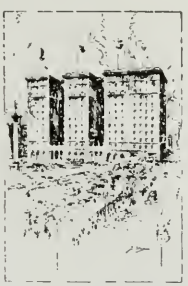

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GEORGE WASHINGTON SMITH, ARCHITECT

Frontispiece
The Architect and Engineer
February, 1925

THE
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FEBRUARY
1925

VOL. LXXX
No. 2

The RIVIERA REVISITED†

By
Irving F Morrow††

I—PEBBLE BEACH

NEED it be explained that I am not recording impressions of Mediterranean travel? Some time ago,* when I had occasion to review the architecture of the Pebble Beach district, I was impelled to laud this lovely stretch of coast from Del Monte down to Carmel and beyond as the California Riviera. Subsequent visits have reassured me that in so doing I was not merely falling victim to a sort of realtor's irresponsible enthusiasm. Nowhere do I know more suave curvings of promontories and recessions of bays; nowhere a more gracious meeting of forest and sea; and nowhere a place where the native vigor and richness of these two aspects of nature are so tempered by an idyllic spirit and so amenable to human uses. This is country in which man may live without desecrating his surroundings and without being belittled by them.

The appelation, of course, was put forward as a sort of symbolical suggestion. I do not mean that this country is of similar aspect to the Mediterranean Riviera; much less that any irrelevant or snobbish foreign standards should be consciously imposed in its development. It is a unique thing demanding its own personal treatment. I have only wished to imply that in the scheme of Western life it seems privileged to occupy a position analogous to that of the European Riviera, and can be thought of as a supremely human and civilized recreation ground.

Perhaps it is wrong to suggest a prototype of so definite a character and so complete in development. It may smack of a spiritual subservience which could not be but regrettable. Country such as this de-

†Photographs by Graham, Del Monte.
††Member of firm of Morrow & Garren, Architects.
*The Architect and Engineer, November, 1921. Vol. LXVII, No. 2.

mands, not copying and archaeological example, but the freshest and most personal expression our own art can put into it. Yet in a way even the turn taken by the architectural development seems to justify the suggested analogy. In the majority of cases, and certainly in the most conspicuous ones, architects seem naturally to have adopted, I shall not say a particular style, but at least a recognizably Mediterranean idiom. This is natural and appropriate. A Spanish influence has pervaded the architecture of California from the beginning. The country's first building was, indeed, definitely Spanish in inspiration and derivation; yet the psychological influences of pioneering and its physical necessities imposed on the art expression an individual distinction. It was Spanish architecture, but it was not the architecture of Spain. Whatever its source, it had become one with California.

Social logic may object that since the present civilization of the

SEA COAST NEAR PEBBLE BEACH, CALIFORNIA

country is to a large degree a supplanting of the older one rather than a development out of it, this tradition is no longer relevant. And it is undeniably true that the life of present day California is rooted in the Eastern tradition of the United States rather than that of Mexico and Spain. It is so true that there are many points at which an observer senstive to the aesthetic aspects of life can not but deplore the loss of a finer fitness in the enjoyment and use of the land and its amenities. The newer life may be more blindly vigorous; it is not of necessity more beautiful nor even, in the large view, more efficient. But the essential thing from the artistic standpoint is that the specifically American civilization of California has had no architecture to offer either significantly expressive of itself or consonant with the physical aspects of the country in which it found itself. One does not need to deny the undoubted beauty of certain examples to maintain that the Colonial of

New England and the South is in reality expatriated on the brown, sunny, rolling, oak dotted slopes of California. Nor need one be at great pains to point out that this trim, meticulous, reticent Colonial architecture, albeit in the direct line of descent historically, is no longer expressive in any really significant way of its own changed civilization, which has failed in the task of a progressive artistic adaptation keeping pace with its advance. What is more natural, then, than that California architects should, by and large, reject a tradition which was not only not pertinent to their felt aesthetic needs, but no longer a vital interpretation of the life professing it? If we are to have anachronisms, let them at least be our own anachronisms and aesthetically appropriate ones. The present life of California may be American life. But since American life has failed to impose its individual spirit in any authoritative sense on its architecture, California architects have turned to the

SEA COAST AT PEBBLE BEACH, CALIFORNIA

original art of the country, which they have instinctively felt to be harmonious and capable of a significant and expressive development.

Let no one be disturbed, however, at the prospect that the architecture of California may vary from that of New York, and thereby be provincial. Admitting a certain uniformity—an unfortunate and unnecessary one, be it said— in the social impulse throughout the land, it still remains true that other factors strongly impinge on the course taken by architectural expression; and not the least of these are climate and the character of the surrounding landscape. These two factors alone would suffice sensibly to differentiate California architecture in the most appallingly uniform social milieu. And for the satisfaction of these divergent tendencies there would seem to be no starting point more appropriate than the place where the old Spanish builders left off.

I say starting point, because no architect sensitive to the necessity

of growth and development in living organisms can contemplate a static architecture eternally dedicated to the repetition of houses which could be classed as "Spanish". We look forward to a living architecture which will keep pace with the movements of a living social organism. Yet the circumstances of an arbitrary beginning, without authoritative tradition, have imposed the difficult necessity of a more or less conscious start. Now the architecture of the Spanish pioneers has not only the advantages I have mentioned—historical background and intimate harmony with its milieu. It possesses another characteristic of inestimable importance as a

PINE FOREST, PEBBLE BEACH, CALIFORNIA

more or less conscious starting point for architectural endeavor. It is an unfinished style. There are architectural styles which seem unprofitable fields of activity for forward-looking development because they have been carried to their consummation; all their capacities of expression have been realized. Further effort with them bears much the same relation to living art that the achievements of the artificial flower maker bear to the activities of a Luther Burbank. The possibilities of expression in the architecture of Spanish California have not been thus exhausted. No rigid and formal necessities of proportion have developed; nothing touching the quantity or nature of ornament has become obligatory.

The completest freedom is still realizable with the fundamental elements of composition—mass and fenestration. Thus the style allows ample scope for the saying of whatever a real designer has to say. Misguided architects have approached the problem with the deference due the archaeological museum. There remain others, spiritually more independent, to demonstrate that the style is viable, that it has the seed of potential development. Indeed, such a development is already visibly under way. Formerly this architecture could be referred to only as "Spanish". Already the field of inspiration has broadened so that even

CARMEL BAY FROM HEIGHTS, PEBBLE BEACH

untechnical observers describe it as "Southern" or "Mediterranean". Since the growing body of work still remains unquestionably homogeneous, there must have occurred a degree of assimilation, and not just a diffusion of interest. Italian, Provencale, even Moorish elements are entering and fusing with the original Spanish. As this architecture becomes more generally Mediterranean, it is becoming less specifically Spanish. In the next evolutionary stage it will be recognized as authoritatively Californian.

We are thus witnessing at Pebble Beach a phase in the formation of a style which will one day be regarded as indigenous. The same pro-

cess is observable to some extent at points around San Francisco Bay; though hitherto the greatest achievement along these lines has probably been in the vicinity of Los Angeles and Santa Barbara. If there is ever to be a recognizable California style, it will not burst Athene-like, full-panoplied, from any architect's head. It will be the result of measured but steady evolution out of a wide-spread body of converging, or at least parallel efforts. It is impossible to foresee to what forms this activity may lead, but it seems a reasonable conjecture that the first steps are going on around us. Already many of the names most conspicuous in giving a direction to California architecture are represented at Pebble Beach. Future historians will regard this community as one of the cradles of the art.

Going over this territory but a few years ago one might have still sensed a certain suggestion of pioneering. Today building has increased

STUDIO OF MR. J. MORA. PEBBLE BEACH
J. Mora, Architect

to the point where we feel the reality of the community, but no loss in character to the country. The outstanding examples of the earlier period still hold their own. At that time, among the many presented, there were selected for special comment Mr. Hobart's Del Monte Lodge and Cravens house; Messrs. Pierpont and Walter S. Davis' Cook house, and Messrs. Bakewell and Brown's Clark house. A revisit bring no disillusion as to the architectural value and individuality of these buildings. Newer neighbors now uphold the standard set by the earlier work. Messrs. Willis Polk & Co.'s Crocker house, then hardly completed far enough for photographing, now fulfills its promise as a conspicuously fine example of Italian influence, treated with a freedom proper to its magnificent site commanding the full sweep of Carmel Bay. Mr. Maybeck's striking individuality is evident in the Ford house. Messrs. Miller & Warnecke's Test house is an interesting example of free treatment of the Spanish tradition in a moderate sized dwelling. The first

building, I believe, to be erected by an Eastern architect is the Chase house, by Mr. Addison Mizner. Here is a composition also Southern in inspiration, but it is interesting to note how it differs in spirit from those of California origin. To us its Romanesque suggestions seem more stylistic because of our own more complete immersion in the Renaissance phases, but there is no doubt that piquant and interesting ideas are to be found in this direction. And its many vertical lines are not inharmonious in the forest of small pines where it lies.

As to the two outstanding examples of the newer work, outstanding by virtue of the excellent advantages taken of size and position, there would probably be little dissent from naming Mr. Smith's Vincent house, and Mr. Tantau's Hunt house. I say newer work; in fact, the one of these buildings is no more than just completed, and the other is still in the hands of the workmen. Mr. Smith has been inspired by the rocky

STUDIO OF MR. MARK DANIELS, PEBBLE BEACH
Mark Daniels, Architect

cliffs and their contorted cypresses to a fascinating composition, exuberant, almost tumultuous, yet, paradoxical as it may sound, breathing an air of satisfaction and serenity. After all, if these restless cypresses can express a calm of ages, why not an architectural composition? Certainly Mr. Smith has sensed the implications of his site, and done one of the finest things of his career—sufficient answer in itself to critics who charge the Spanish tradition with necessary monotony of expression. Mr. Tantau has been no less happy in contrasting his long horizontal lines and plain walls with the quiet repetition of verticals of the pine forest. His composition is eloquent tribute to the virtue of simple lines and plane space. By the rigorous elimination of every superfluity he achieves perfect distinction because the essentials are right.

The preliminary design by Mr. Hobart and Mr. Tantau for the new Del Monte Hotel whets one's desire to see this important work realized.

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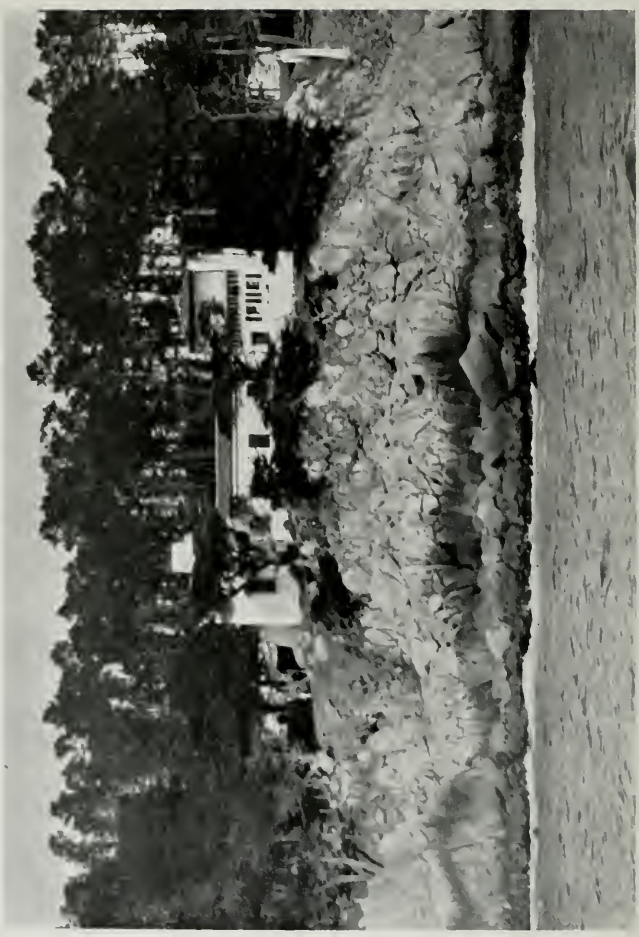

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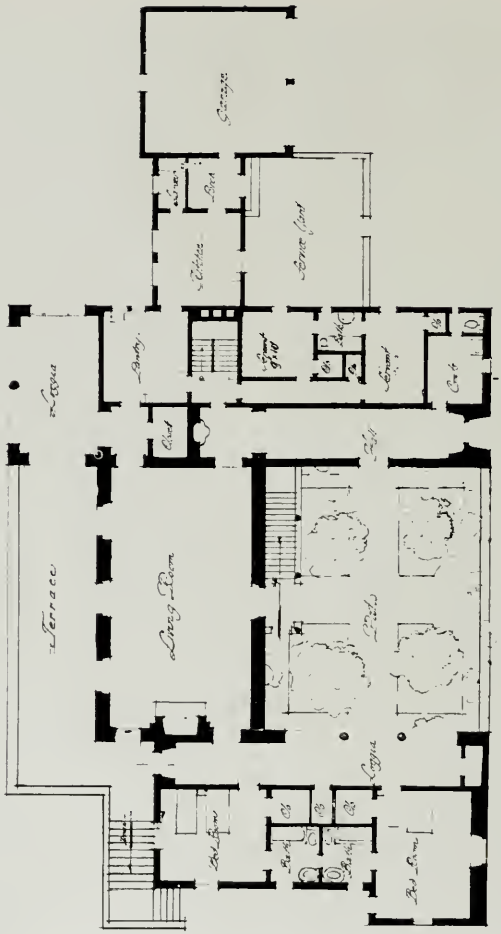

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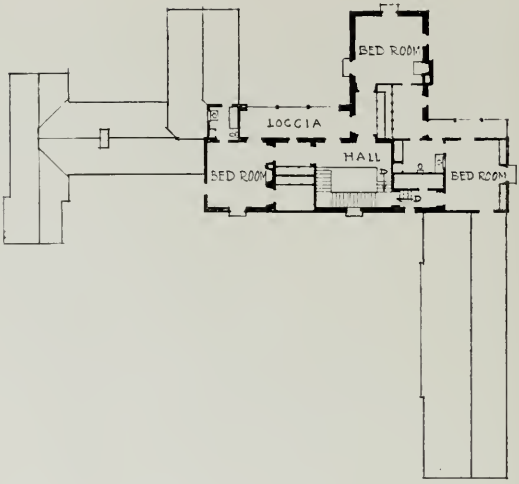

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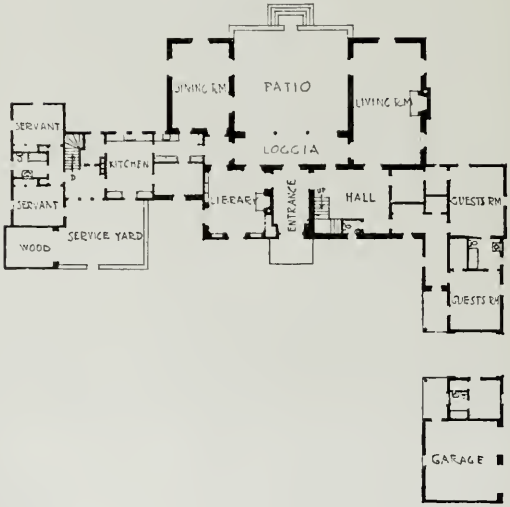

FIRST FLOOR PLAN, HOUSE OF MR. AND MRS. HARRY C. HUNT, PEBBLE BEACH
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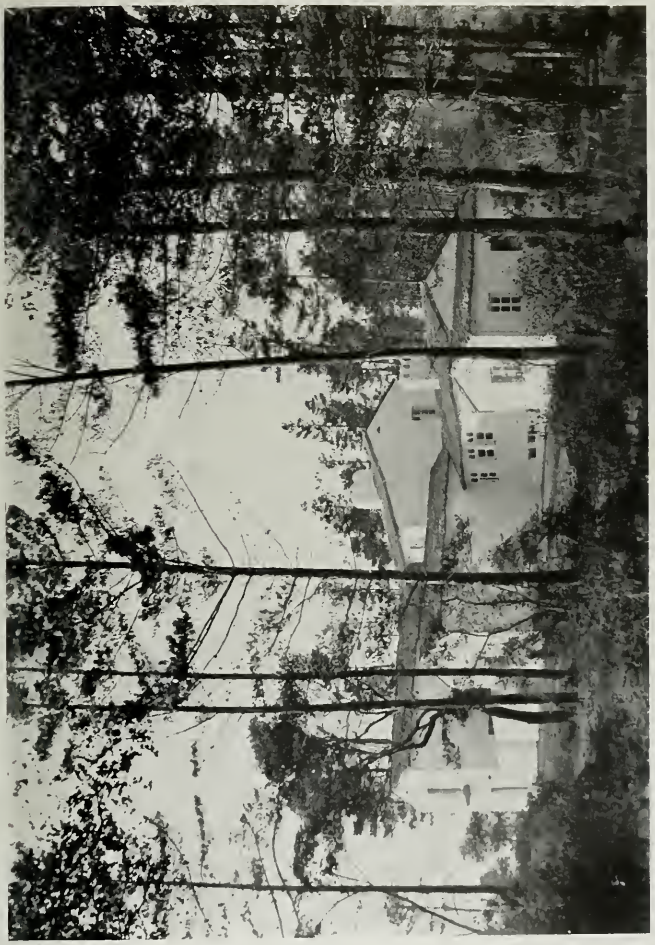

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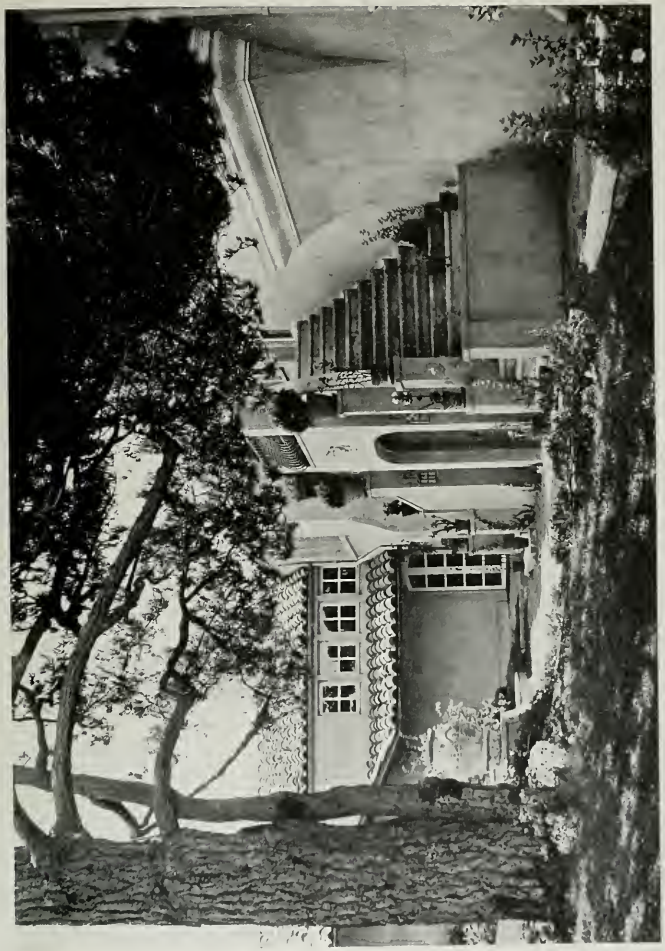

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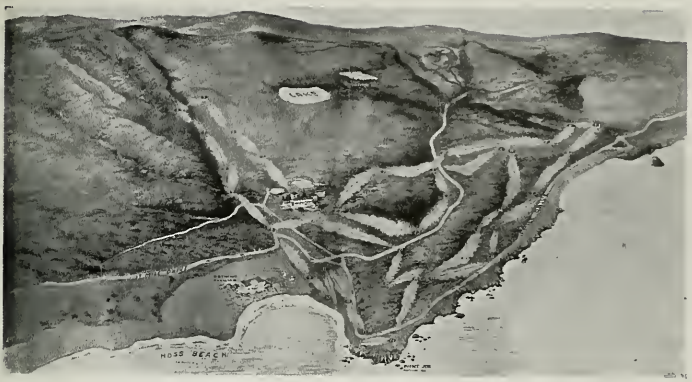
SUGGESTION FOR HOUSE, MONTEREY PENINSULA COUNTRY CLUB
CLARENCE A. TANTAU, ARCHITECT



PLAN OF GOLF AND COUNTRY CLUB PROPERTY, PEBBLE BEACH

The Riviera Revisited

By IRVING F. MORROW

II—MONTEREY PENINSULA COUNTRY CLUB

THE Mediterranean Riviera is a finished product; one does not conceive the opening up and development of entire new tracts. The California Riviera, on its human side, is in the making. Del Monte, Monterey, Pebble Beach, Carmel, Carmel Highlands, are only spots of habitation in the course of a long coast line. In fact, one thanks fortune that most of this territory escaped "development" until a time when its beauties and possibilities could be appreciated. The day was not far back when "improvement" might have consisted in cutting trees and erecting impertinent entrance pylous to the defaced and useless landscape.

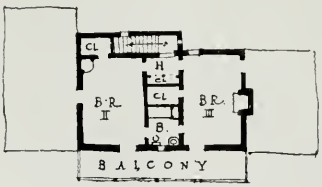
Pebble Beach was the first area on the marvelous Monterey Peninsula to be "opened up", as the real estate phrase has it. Now it is proposed to open as the Monterey Peninsula Country Club a new tract of sixteen hundred acres of pine and oak forest and shore line between Pebble Beach and Monterey. And to anyone envisaging the problem with intelligence and imagination there must be something thrilling in the idea of thus deliberately planning for an extensive virgin area. The famous large scale developments we know, such as the French and Italian Riviera, the Amalfi coast, the country around Florence, etc., and which set our standards of beauty, are after all haphazard and accidental growths. Their quality of ensemble is chargeable to instinct more largely than to foresight and planning. Harmony has resulted not so much as an end held deliberately in view, as an inevitable by-product of a sane and healthy attitude toward life. To the people who built up these districts beauty was not an optional luxury, but a necessity of life itself. They never laid hand to their land without respect, even

SUGGESTION FOR HOUSE, MONTEREY PENINSULA COUNTRY CLUB
Clarence A. Tantau, Architect

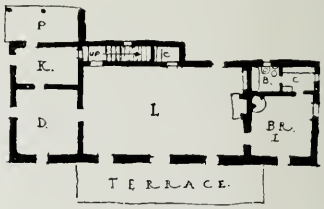
veneration. An infallible instinct for the right and appropriate operated to produce results of supreme beauty and rightness.

Now it can scarcely be maintained that American life, left to itself, has manifested such an infallible instinct for the beautiful and appropriate in touching its land. And in offering this tract to the public the Del Monte Properties Company has worked out a far-reaching plan to forestall as far as may be the faults which have been only too common in American suburban and country developments.

The area involved consists of a strip of ocean shore with curving white beaches and rocky points, backed by rising hills covered with pine forests and fringes of scattered oaks. Briefly, the plan is to build two golf courses, which will make clearings and vistas through the forest slopes to the ocean. Somewhat over one-half of the total area goes into home sites averaging a third of an acre. Many of these overlook the fairways, and all are accessible by roads dictated by the forest views and topography. Only the width of road necessary for traffic is paved, the rest remaining bordered by the native trees. The blocks are in general long and narrow, with park areas and bridle paths reserved in the middle between the backs of the rows of lots. All trees are left standing, and none can be cut without permission. There is also liberal provision for various community activities, such as swimming and sea



FIRST FLOOR PLAN



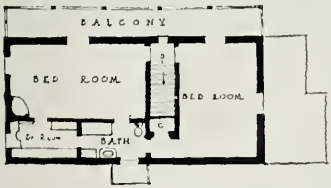
SECOND FLOOR PLAN

SUGGESTION FOR HOUSE, MONTEREY PENINSULA COUNTRY CLUB
Clarence A. Tantau, Architect

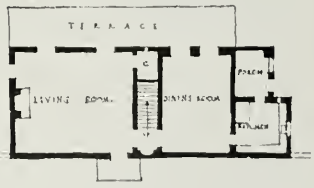
bathing, tennis, trap shooting, etc. A children's playground is provided at the beach.

No building will be permitted without the approval of the club architect. For the reasons I have outlined in speaking of the Pebble Beach architecture, it is desired that the homes of the Monterey Peninsula Country Club assume a more or less Mediterranean character. Most of the houses will naturally be much smaller and of a more modest nature than the outstanding ones touched upon at Pebble Beach. Anyone with misgivings either as to the artistic possibilities of such small-sized houses, or as to the adaptability of the style named for the purpose, need only consult the delightful suggestions for typical houses which have been prepared by Mr. Tantau. Mr. Tantau has also drawn most promising sketches for a clubhouse to be erected on a knoll central to the whole area.

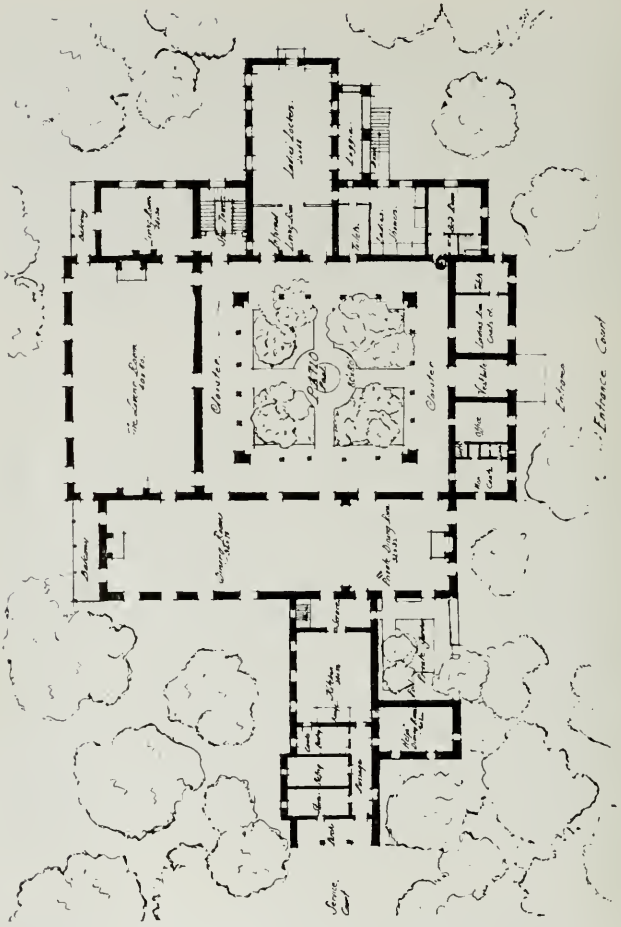
This is assurely a most interesting attempt to realize a harmonious community without in the process destroying the very feature which has made its inception seem worth while. It is a piece of large-scale and broad-minded planning which will be watched with interest. The next achitectural survey of the California Riviera will probably call for a showing of the domestic work in the Monterey Peninsula Country Club.



SECOND FLOOR PLAN



FIRST FLOOR PLAN



CLUB HOUSE, MONTEREY PENINSULA COUNTRY CLUB
CLARENCE A. TANTAU, ARCHITECT

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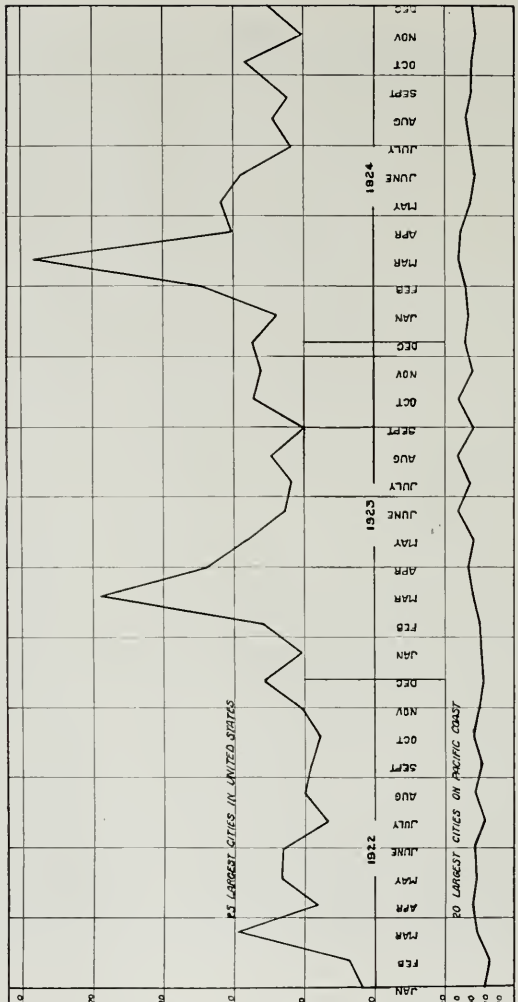

This chart shows the relative volume of building permits issued in (Upper Line) twenty-five largest cities of the United States, and in (Lower Line) twenty largest cities of the Pacific Coast, each month during 1922, 1923, and 1924. Chart compiled by the Educational Department of S. W. Straus & Co. from the National Monthly Building Survey of that House.

Looking Ahead

By W. K. BOWES,
Vice-President and Pacific Coast Director of Loans for S. W. Straus & Co.

THOSE who have to do with the building industry in our Pacific Coast cities may confidently expect the year of 1925 to write a more satisfactory record than did the year of 1924. From every source of information on which a student of the subject may rely, come indications of a much more active program than that of last year, with a possible exception of certain communities where the unfavorable economic influences of a few months ago have not yet been wholly dissolved. And, for the Pacific Coast as a whole, it may not be a too optimistic hope to hold that the unprecedented record of 1923 may be equalled or exceeded during the current year.

Home building, always the major item in any city's construction program, is sure to respond to a demand which has not been so insistent since 1918 and 1920. The housing demands of new and expanding industries, due to the present rapid development of manufacturing along the Pacific Coast, seems likely to reach greater proportions than ever before. Construction of buildings of major types promises to be much more active than it has been since 1923. Applications for loans for the financing of such buildings, from all parts of the Coast, now under consideration by S. W. Straus & Co., are much greater in number and in cost volume than has been the case at any previous time since this house extended its operations into the Far West.

A summary of the building program, during the past three years, for the twenty-five cities of the United States from which the greatest volume of building was reported, shows that 1923 gained 23% over 1922, and that 1924 gained 6% over 1923 and reported a total 31% greater than the total for 1922. This indicates a more rapid advance during 1924 but not for 1923 than is shown by the annual totals for our Pacific Coast group of twenty leading cities. In the latter, 1923 showed a 26% gained over 1922, while 1924 totaled less than one per cent over the previous year and but 27% greater than did 1922. The reduced figure for 1924, however, is chiefly due to the marked slowing down of building in Los Angeles. The volume of building in that city is comparatively so great, from 30% to 40% of the whole, as to dominate any such analysis.

A recent nation-wide survey of housing shortage, conducted by S. W. Straus & Co. and covering reports from 528 cities of the United States, discloses an existing demand for buildings totaling $4,050,820,000 in value. Of this amount $281,115,000 was reported from 43 cities of the Pacific Coast area. It is evident, therefore, that these Western cities, during 1924 at least, have been making less effort toward meeting the demand for new construction than have the Eastern centers of population and that we are entering upon a new year facing a comparatively greater demand for building activity.

Although a slightly increased schedule of costs affecting building materials may be expected in the immediate future, one cannot now foresee any movement of this kind of sufficient strength to exert any appreciable influence on building activities. The price schedules for a certain basic materials which weakened toward the close of 1924, now show a slight upward trend which may be expected to continue to some extent and in customary proportion to demand as building increases in volume. No important increase in costs of building materials or labor, however, is anticipated, nor changes which can retard the building program which conditions promise for the next year or more.

A reference to the graphic chart, which is published in connection with this article, will clearly visualize the outstanding stability which characterizes the building industry of the Pacific Coast as compared with that of the United States as a whole. The upper line in this chart indicates the relative total volume of building permits issued, month by month, during the last three years, in twenty-five principal cities of the United States, while the lower line indicates the relative total volume of permits for twenty chief cities of the Pacific Coast.

The remarkable month to month variation which characterizes Eastern building operations is due to three basic causes; seasonal influence, labor interference, and economic and political conditions. The weather and climatic conditions which obtain in Eastern cities do not control along the Pacific Coast. Our Western cities have enjoyed a far greater harmony between employer and employee in the building industries, as in most other lines of business. The comparative isolation of the Western Coast area makes it much less subject to the effects of sudden or violent changes in condition or policy of the dominant financial centers of the Eastern states.

While it is evident from the broader curves shown in the chart that our Western cities are affected, in a general way, by similar timely influences that have dominated Eastern building, the violent fluctuations which are a distinctive feature of the latter are noticeably absent from the graph line for the West. Particularly is this noticeable in the case of the high peak reached by the month of March. March shows an enormous volume of building permits issued in Eastern cities as compared with other months, emphasizing the seasonal influence which affects practically the whole of the United States except the Pacific Coast area. In the latter, however, seasonal influence has very little effect, as the graph line plainly shows.

It is for the purpose of correcting, so far as possible, the seasonal variation in building activity in the Eastern states, that Secretary Herbert Hoover has been recently directing the thought and effort of his Committee on Seasonal Operation in Construction Industries. Eastern builders have, for several years, been striving to emulate more closely the customary program of builders in the Far West, so far as concerns all-the-year-around operations, and with a very considerable success. That the Pacific Coast building industries still enjoy a marked advantage in this respect is, however, clearly evident.

The generally contented condition of the building crafts in our Western territory, as compared with the situation existing elsewhere in the country, is due in large measure no doubt, to a much steadier employment. In fact, idleness of workers caused by customary midwinter cessation in building is one of the chief causes for the unemployment problems with which Mr. Hoover and his associates are struggling, as is pointed out by Mr. H. R. Daniel, one of Mr. Hoover's committeemen, in a recent Straus Investors Magazine article. More generally satisfactory working conditions also obtain in the West and make for a far more constant building program.

The influence of financial conditions which underlie all business, is always felt to a marked degree in the building industry and to a greater extent than in any other phase of production among the essentials. But the commercial and industrial life of our Pacific Coast cities is far more sufficient unto itself and less dependent on national movements in general than is the case in any other part of the United States. For this reason the even tenor of our way is less broken or swayed by those mysterious influences customarily grouped under the comprehensive

term "Wall Street". We can now anticipate no financial influence that may injuriously affect our building program. Our Far Western cities are presenting a very large and insistent demand for buildings which must be met. No interference with a steady and continuous activity from labor difficulties is foreseen. From every angle from which one may visualize the building industry for the coming months, one can form only an optimistic expectation for 1925 in our Pacific Coast cities.

* * * *

The Reconstruction of Japan

PERMANENT reconstruction in Japan will not begin for three years, according to the Far Eastern Division of the Department of Commerce, if the public declarations of the government can be taken as a criterion. There must be plans for the physical reformation of streets and the adjustment of land holdings. Japanese bankers and experienced industrial leaders appreciate the fallacy of the statements of early adjustments, and they go so far as to predict that it will be a decade or longer before this gigantic reconstruction program becomes a reality. The temporary buildings will not give way to permanent construction until necessity requires and in any case they are protected by law for a period of five years. At the end of that period it will depend upon the prosperity of the individual as to whether he will or will not reconstruct his building. In the meantime whether the city and national governments will carry out their announced program of reconstruction and expansion of public utilities prior to the expiration of the five-year period, remains an open question. The present temporary structures have been built on approximately the old locations and the carrying out of the ambitious street reconstruction program will involve the destruction or removal of a large number of them. It is obvious, therefore, that the protection of these buildings for a period of five years will automatically postpone the street improvement plan until the expiration of that period.

The present cabinet is committed to a program of retrenchment and has already announced several contemplated reductions in governmental expenditures. This program is not influenced so much by the reconstruction program as by the desire, which has been evident for several years, to place the national finances on a more favorable basis. The country has been suffering from more or less pronounced depression in its industrial undertakings since 1919 and foreign trade has shown each year the heavy excess of imports. Labor and production costs have been maintained at abnormally high levels thereby affecting the ability of Japan to compete in the world markets. It is the desire of the present cabinet to correct these evils. It is almost certain, therefore, that the reconstruction budget for the next fiscal year will be substantially reduced and that this reduction will continue through the next four or five years.

The long-continued depression in the industries of the country has necessitated extensive borrowing by industrialists. At present industrial undertakings are floating short-term debentures of 2, 3 and 4 years at an average interest rate of 8½ per cent. These funds are generally used for the settlement of past obligations and it seems unlikely that they will be able to cancel these obligations during the next few years. Therefore, many companies will again be in the market at the end of three or four years to take up the loans now being made. These companies will hardly be in a position to undertake extensive new reconstruction.

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Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer, Inc.
PUBLICATION OFFICE:
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828
The publishers disclaim any responsibility for statements made in the advertisements of this magazine.
Terms of Subscription
(Including postage) to all parts of the United States, $2.50 per annum; to Canada 75c additional; to all Foreign points $1 additional
Vol. 80 FEBRUARY, 1925 No. 2

ARCHITECTURE is the most human of the arts of design. It stands closest to our lives, vying even with clothing and the arts of the book for our first consideration. Architecture has mothered many other arts through the centuries, giving them a place to express themselves and a text to illustrate.

RICHARD F. BACH.

GARDENS OF MONTEREY PENINSULA

Where abrupt red-rocked cliffs and blue sea combine with forests of pungent pine and cypress to form landscapes of great beauty homes designed by our best California architects have been built, and these are welded to their surroundings by gardens, many possessing great charm.

Precisely as the architect studies his client and all physical problems in fitting his house to the topography with the aim of achieving the greatest natural charm, so must the landscape architect learn the tastes and feelings of his client and gain an understanding of the architect's intention in order to evolve a garden that will blend with the house and the site as well as the personality of the owner.

A home should be like a beautiful body, lovely in form, texture and color, and enclosing the owners whom we may consider to be its heart and soul. The garden then becomes the drapery which partially clothes and expresses the body and enframes the whole. This drapery includes construction, plant materials, and the use of water and sky, and should also be lovely in the qualities of form, texture and color. The play of children, hum of insects, and song of birds will animate the picture into vivid life while sun and shadow and the moods of the day will ensure an ever changing beauty—a picture enduring in proportion to the excellence of the design and the conceptions and dreams unfolded by the designer. The house, terraces, steps and balustrades, walks, arbors and seats will form in construction a kind of anatomy which will be emphasized by specimens, groups and masses of trees and shrubs. Herbaceous plants will fill in the design with glowing color just as enamel reveals the design of exquisite jewelry of gold.

An owner reposes confidence in the taste, training and experience of an architect of high standing and feels sure that his home will thus be rendered far more attractive and beautiful in design than anything that a contractor might devise. Likewise an understanding of the meaning of the profession of landscape architecture is gradually being gained by cultured people of the west. They are coming to realize how vastly greater their enjoyment of a place might be over a long period of years, living with a garden studied and planned professionally for a picture of increasing beauty, in comparison with the stiff, heavy and unimaginative work of an ordinary

untrained mind. Thoughtful owners now would hesitate to risk an investment of a large sum of money for what a contracting gardener or average nurseryman might do, knowing that the slower, more carefully evolved plans of the landscape architect, together with his taste, feeling and riper imagination in interpreting such plans on the ground, will insure a happier result — an achievement more expressive of a most noble art.

—Emerson Knight,
Landscape Architect.

AND the more I think it over the more it seems to me that it is up to the architect to come out of it and establish himself by way of the press-agent.
ALBERT K. SANDERS, *Seattle.*

ARCHITECTS AND THE NEWSPAPERS

It is unfortunate the daily press is not more concerned in accurately reporting the work of the architectural profession. Most of the newspapers purposely omit an architect's name when referring to a building—because they say that giving the architect the credit to which he is justly entitled is too much like advertising. Yet these same papers frequently mention the names of physicians and attorneys, which professions are opposed to advertising as much as architects.

In giving the San Francisco press advance proofs of its Annual Building Forecast, this magazine found that the newspapers did not care for the names of the architects. They were glad to have the list of proposed structures, together with names of owners, location and cost of the work, but in every case the name of the architect was blue-penciled. We do not consider this quite fair but it seems to be an accepted policy with newspaper publishers. A more liberal attitude might be taken by editors if architects would be less reticent about giving out building information.

There are times of course when an architect cannot make premature announcement of a building for which sketches are being made, but at the proper time the information should be released—not when construction has commenced but at a time when the information has news value.

Being more considerate of the press may also help to do away with so much carelessness now exercised by many newspapers in reporting the work of certain architects. Recently we received a letter from one of the largest architectural firms in California complaining because of the publication in a daily paper of the fact that a member of its architectural staff had joined another firm of architects and the item went on to tell of this man's important relations with the company he had left, leaving the public to believe that practically all the good work turned out by the firm was due to this draughtsman's versatility. "Such articles," says our correspondent, "do inestimable damage to a firm, as a statement once made in the daily press cannot be easily corrected. The work of an architectural firm is the result of the combined efforts of the entire organization under a directing hand, and if any credit is to be given it should go to the firm and not to individuals in its employ."

A CHRISTMAS CARD EXHIBITION

The happy custom of some architects and draftsmen of remembering their friends with especially designed Christmas cards has led to the suggestion that as many examples of the Yuletide greeting be assembled into an informal exhibition, say in the rooms of the San Francisco Architectural Club. It may be too late to carry out the idea this year, but it might be well to keep the subject in mind and the club would find that by holding a display of this sort once a year it would create interest fully as great, if not greater, than that shown in an architectural exhibition. If one is to judge from the few very beautiful and unique cards that were so thoughtfully mailed to the editor, there must be a most interesting collection available. Furthermore, the newer cards could be augmented with vintages of several seasons back. The Architectural Club of Los Angeles has started to gather a collection and keen interest is being taken by the members of that organization in the proposed display.

San Jose Telephone Building

Plans have been completed by Architect E. V. Cobby, of the Pacific Telephone & Telegraph Company, for a new exchange building at San Jose and a contract has been let to Monson Bros. to erect the building at an approximate figure of $175,000. Plans are being completed by Mr. Cobby for a new exchange building in Burlingame at a cost of $140,000.

San Jose Architects Busy

New work in the office of Architects Binder & Curtis, San Jose, includes alterations to the F. A. Gummer building at Second and San Fernando streets, estimated to cost $35,000; one-story class C retail grocery store for Mr. William Burnhart to cost $60,000; and some minor work for the supervisors of Santa Clara county.

Nob Hill Hotel

Plans are being prepared by Architects Weeks & Day, of San Francisco, for a fifteen-story class A hotel to be erected on the site of the Mark Hopkins Institute at the corner of California and Mason streets, San Francisco, at a cost of $3,500,000. The hotel will have 600 rooms, and will be financed by the S. W. Straus Company.

Y. W. C. A. Hotel, Oakland

Architect C. W. McCall, of Oakland, is preparing working drawings for a six-story reinforced concrete Y. W. C. A. hotel to be erected on Harrison street, near Grand avenue, Oakland. There will be forty-seven rooms to a floor. The estimated cost is $200,000.

Los Angeles Warehouse

Architects Morgan Walls & Clements, Van Nuys building, Los Angeles, have completed plans for a Class A warehouse to be erected on McGarry street, for Mr. R. H. Arnold. Estimated cost is $500,000.

Fourteen Story Club Building

Architects Curlett & Beelman, of Los Angeles, have completed plans for a fourteen-story class A club building for the Pacific Club of Long Beach. The improvements will cost $900,000.

Pacific School of Religion

The first unit of a group of educational buildings for the above institution will be erected this year from plans by Architect W. H. Ratcliff, Jr., of Berkeley. The site is Arch street and Hearst avenue, Berkeley.

Los Angeles Office Building

A thirteen-story class A store and office building will be erected at once at 8th and Francisco streets, Los Angeles, from plans by Architects Walker & Eisen. Dr. F. E. Morgan is the owner.

Architect Moves Oakland Office

Architect William H. Weeks has moved his Oakland office from the Tribune Tower to the Ray building, 1915 Broadway. Plans are being made in this office for a one-story reinforced concrete store building to be built on the west-side of Piedmont avenue, for Mr. Weeks, who is owner of the property. There will be six stores.

Eight-Story Community Apartments

Architect C. A. Meussdorffer, Humboldt Bank building, San Francisco, is preparing plans for an eight-story Class B community apartment house, to be erected on Jackson street, west of Laguna, San Francisco, for the M. V. B. Mac Adam Company, Incorporated. Cost is estimated at $500,000.

Palo Alto Apartment House

Architect Joseph L. Stewart, of San Francisco, has completed plans for a two-story frame and stucco apartment house in Palo Alto for Mrs. W. D. Wasson, estimated to cost $20,000. Mr. Stewart has also made plans and awarded a contract for a $100,000 apartment house in the Lake district, Oakland.

Office and Theatre Building

Plans are being prepared by Architect B. Marcus Priteca, Seattle, for a Class A store, office and theatre building to be erected at Market, Hyde and Fulton streets, San Francisco, for Mr. W. B. Wagnon, 325 Bush street, San Francisco. Theatre has been leased by Alexander Pantages.

Brick Apartment House

Plans have been completed by Architects Baumann & Jose, for a six-story brick apartment house at Octavia and Sacramento streets, San Francisco, for Mr. D. J. Clancy. Estimated cost is $125,000.

Country Residence

Architect Lewis P. Hobart of San Francisco is preparing plans for a $40,000 English type country house at Hillsborough for Mrs. J. D. Grant. Lindgren-Swinerton, Incorporated, will be in charge of construction.

Emergency Hospital

Plans have been completed for a brick and terra cotta emergency hospital for the city of San Francisco, on Sacramento street near Drumm, Meyer and Johson, architects. Bids will be opened on March 4th.

Episcopal Cathedral

Plans are to be prepared at once by Architect Lewis P. Hobart for another unit to the Episcopal Cathedral at California and Taylor streets, San Francisco.

Harvard Architects Chosen

Messrs. McKim, Mead and White of New York have been selected architects for the new group of buildings for the Harvard Business School, under the George F. Baker Foundation.

The jury to make the selection in the final stage of the competition was composed of: President A. Lawrence Lowell, Chairman; Mr. George F. Baker, donor of the proposed buildings; Mr. Charles F. Adams, treasurer of the University; and the following architects chosen from a list suggested by the competitors: Messrs. John Russell Pope, of New York; M. B. Medary, Jr., of Zantzinger, Borie and Medary, of Philadelphia; and Louis Ayres, of York and Sawyer, New York.

The competition was in two stages and the competitors in the final stage consisted of the six winners chosen some two months ago from the forty-nine original contestants, together with six originally chosen to enter the final stage without participation in the first stage because of previous work for the University, for Harvard Clubs, for the donor, or who have official connection with the School of Architecture of the University.

Those in the final stage of the competition as the result of successfully winning the first stage were: Aymar Embury II; Raymond M. Hood; Ludlow & Peabody with Harold F. Kellogg of Boston, associated; Benjamin W. Morris with Eric Gugler, associated; Egerton Swartwout, all of New York; and Hewitt and Brown of Minneapolis.

Los Angeles Civic Center

At a recent meeting of the City Planning Commission of Los Angeles the proposed Administration Center for the city and county was discussed. Mr. Sumner Hunt, first vice-president of the Allied Architects' Association, explained the plan prepared by the association under its contract with the city and county. The plan previously prepared for the city and county by Messrs. Cook & Hall, landscape architects, was also discussed. Among the speakers were Architects Carleton M. Winslow, Albert C. Martin and C. E. Noerenberg, George Damon, consulting engineer, and G. Gordon Whitnall, director of the City Planning Commission.

Competition for Monument

The Vermont Marble Company is sponsoring a competition for a small monument, open to architects and designers practicing in the United States. The competition closes April 1, 1925. Prizes will be awarded as follows: Design placed first, $400; second, $200; third, $100; fourth, $25. The program may be obtained by addressing the Vermont Marble Company, 101 Park avenue, New York, or the San Francisco office.

Seattle Building

Showing a marked general growth in accommodations for a swelling population and an expanding commercial, financial, industrial and marine life, Seattle builders during 1924 were granted permits for construction valued at about $27,500,000, as compared with $22,509,505 for 1923. Approximately 3,000 homes were started during the twelve months, according to building permit figures, with a total valuation of about $9,150,000. Warehouses, docks, wholesale buildings and factories costing about $3,867.110; churches, theatres, schools costing $2,737,800, featured the years' program. Eighty new factories of all sizes were started. Projects for 1925 promise to surpass in cost those of 1924.

Another Los Angeles Hotel

Architect Kenneth MacDonald, formerly of MacDonald and Couchot. of San Francisco, who moved to Los Angeles a year ago, is preparing plans for a twelve-story hotel to be known as the St. Regis and to be built at Sixth and Witmer streets, Los Angeles, for Mrs. Hilda Foote, owner and lessee of the Hotels Commodore, Senator and Whitmore in the same city. The St. Regis will have 242 rooms, 100 per cent baths and will represent an investment of $1,000,000.

Fresno Firm Dissolves

The architectural firm of Coates & Traver, Fresno, has dissolved partnership, Mr. Coates continuing the office in the Rowell building, while Mr. Traver becomes associated with the Trewhitt-Shields Company in charge of the architectural department, Los Angeles office. Mr. Traver was at one time connected with the State Department of Architecture, Sacramento.

Licenses to Practice

Licenses to practice architecture in California have been granted to Messrs. George R. Eckel and Edmond J. Eckel, 520 Lincoln building, Los Angeles, and Will S. Aldrich, 1104 Corby building, St. Joseph, Missouri, all members of the firm of Eckel & Aldrich, architects for the National Biscuit Company's new plant in Los Angeles.

Portland Construction

Construction in Portland during 1924 totaled in value $29,959,085 as compared with $25,247,135 in 1923. This is the greatest total in the Northwest. The building total of the Rose City is typical of the rapid growth of the Pacific Northwest, especially the coast districts. Portland building constituted three-fourths of the total building of the ten leading Oregon cities.

Personal

The Chester H. Loveland Engineers, Balboa building, San Francisco, announce that Mr. F. M. Faude having resigned as chief hydraulic engineer of the California State Railroad Commission, has become associated with the staff of that organization and has taken up the work of consultation and practice in the office.

Mr. Andrew M. Jensen, Fresno engineer, has been selected to settle a dispute between Hanford citizens and the California Construction Co. of San Francisco, street paving contractors, regarding the quality of newly laid pavement.

Architect B. S. Hayne, formerly a member of the firm of Norberg & Hayne, Balboa building, San Francisco, has entered the architectural field for himself with offices at 110 Sutter street, San Francisco.

Architect Sylvester A. Lesswig has moved from 682 23rd avenue to 45 Santa Monica way, San Francisco.

Architect Samuel H. Dunford has moved his offices from 605 Ferguson building to 742 South Hill street, Los Angeles.

Mr. E. R. Barnett has moved from the Ochsner building to 3024-44th street, Sacramento.

Architect Lionel H. Pries has moved from 2000 Lyon street to 1242 Francisco street, San Francisco.

Los Angeles Builders' Exchange

A long cherished dream of the members of the Builders' Exchange of Los Angeles is about to be realized, a contract having been signed for the erection of a Builders' Exchange building at the northeast corner of Seventh and Los Angeles streets. The building will be 13 stories and basement, 50x90 feet, constructed of reinforced concrete with pressed brick and terra cotta facing. The upper two floors will be occupied by the Builders' Exchange. Messrs. Walker & Eisen, who have designed many important buildings in Los Angeles, are the architects.

"Pine Homes" Book

The California White & Sugar Pine Manufacturers Association has published a book on "Pine Homes", which, while intended primarily for home builders, contains much information of value for architects and building material dealers. A free copy of the book may be had by addressing the company, 690 Call building, San Francisco. The association is also distributing for the asking valuable information sheets, together with a standard size filing folder.

Two Large Contracts Awarded

Lindgren-Swinerton, Incorporated, have the contract on a cost plus fixed sum basis to build the fourteen-story Class A lodge and office building at Sacramento for the Elks Club of that city. Leonard F. Starks is the architect.

The same contractors will build the new telephone building in the Capitol city at a cost of $500,000.

Fenestra Reduces Price

The cost of Fenestra steel basement windows has been reduced approximately fifteen per cent, effective the first of the year. This reduction, according to the Detroit Steel Products Co., manufacturers, has been made possible by two things: (1) More general acceptance of the steel basement window idea on the part of the builders and home owners; (2) Volume production, with a consequent reduction in manufacturing and selling expense.

Impostor Abroad

A short, smooth-faced man is abroad on the Pacific Coast, posing as an "Architect."

His scheme is to rent an office, place large signs, advertise for sub-contractors, provide fake plans and specifications, get $200 or more in deposits for plans, and then disappear.

If he comes your way report him to the police.

In Seattle he used the name of W. W. Brown.

Engineers' License Law

Enactment of a license law for engineers will be sought by the members of the American Association of Engineers of California at the present session of the legislature. This was the decision reached at the recent state conference in Los Angeles. An amendment to the existing law changing the name of the county surveyor to county engineer and defining his duties will also be sought.

Garden Planning

Mr. Emerson Knight, landscape architect, 9 Geary street, San Francisco, is preparing plans for the garden of Mr. and Mrs. Paul Eliel, in Roble Court, Berkeley. Mr. Knight is also making studies and sketches for the proposed development of the Mountain theatre on Mt. Tamalpais for The Mountain Play Association.

Oregon Architects Elect

The Oregon Chapter, American Intitute of Architects has elected the following officers for 1925: Messrs. Folger Johnson, president; O. R. Bean, first vice-president; Jamison Parker, secretary; Geo. Foote Dunham, treasurer; Chas. D. James, John V. Bennes and Jos. Jacobberger, trustees. Chas. D. James is retiring president.

Roofing Problems

Edited by J. I. HOLDER
Director of Engineering, The Paraffine Companies, Inc.

Promenade Roof Construction

NUMEROUS inquiries prompt this article. The writers of the inquiries cover a variety of questions embracing small porch roofs, hospital solariums and out-door sunning places, roofs to be used as play grounds and hotel roof gardens and promenades.

The subject is of such frequent inquiry it is thought desirable to treat it in a general way in these pages, notwithstanding each case is a distinct and individual problem in itself requiring special study and planning. (Personal and individual answers to all inquiries are always made by the writer.)

Without having definite knowledge as to the type of building (whether brick, concrete, tile or frame) or the character of the building (whether hospital, school, store, office building, residence or garage) or the amount of money which may be used for waterproofing purposes, the following methods necessarily cannot be complete and definite in all details.

Method No. 1: For class A construction where the roof deck is of concrete a heavy coating of hot fluxed asphalt is applied to the entire concrete roof deck including that portion of the walls to be covered by the waterproofing membrane where it turns up, and while hot there is embedded in the asphalt three layers of dampcourse laid shingle fashion, each sheet lapped over the preceding one so that not more than 11 inches is exposed, and between each course asphalt is mopped so that in no place does dampcourse touch dampcourse or concrete. The membrane is turned up all walls and curbs to a proper height and all angles are reinforced with flax felt. The flax felt is carried up to a line 1½ inches above the upturned waterproofing membrane and bonded firmly to the wall making a water-tight joint before the metal counter-flashing is installed. Over this membrane there is applied a finish coating of hot asphalt (not fluxed in this case) and while hot sufficient screened, clean gravel is cast into it to make a good bonding surface for the topping or finish of concrete or cement. The asphalt should have a penetration of 35 and a melting point of 133 degrees F. The first coating of asphalt over the concrete and the asphalt moppings between the sheets of dampcourse should be fluxed by adding 10% of flux (of about the grade and consistency of a high grade road oil) to the asphalt. The surface mopping into which the gravel is embedded should be straight asphalt without fluxing as delivered by the manufacturer. Such construction becomes really a waterproofing job more than a roofing job, and it is a well defined principle in waterproofing that the bitumen or asphalt (the waterproofing agent) should be soft and ductile and have sufficient elasticity to allow one sheet to slip over the other without fracturing in subnormal temperature. Dampcourse is distinguished from ordinary felt as it is a waterproof sheet in itself and of itself, being saturated felt coated on both sides with a coating of bitumen. Ordinary saturated felt, irrespective of weight, is not waterproof in itself and does not provide the tensile strength after being applied as does the dampcourse. Number 24 gauge galvanized iron or 16 oz. copper counter-flashings are recommended, preferably the latter. A suitable reglet opening should be provided in the parapet or fire walls and placed at a point not above 5 inches from the finished roof line. The cement topping or finish should be not less than 2 inches thick reinforced with galvanized mesh—3 inches thick is better. Expansion joints should be placed both laterally and longitudinally through the cement topping or finish spaced at a distance of not more than 10 feet apart and around all walls, curbs, sky-lights and other projections so as to provide for expansion and contraction. These expansion joints should be ½ inch wide running from the finished surface down to the membrane waterproofing and should be filled with either road expansion joint material or a plastic asphalt compound. The concrete topping may be colored with any kind of pigment to harmonize with the general color scheme and may be marked off in smaller squares as desired. On one of the largest stores on the Pacific Coast it is blocked off in 8 inch squares with a cement jointer. This particular roof has been giving service between 7 and 8 years and is perfect with no cracks noticeable.

Method No. 2: In general the same as Method No. 1 except that promenade flat tile is used set in an inch of cement

mortar (no reinforcing mesh) with expansion joints provided and these expansion joints may be placed not more than 20 feet apart laterally and longitudinally through the roof. This likewise is a waterproofing job more than a roofing job.

The following methods may all be classified as strictly roof construction, not waterproofing.

Method No. 3: If cheaper construction is desired than outlined in Method No. 1 or Method No. 2 the following is applicable to either concrete or wooden roof deck construction. Three layers of the strongest and best grade light weight roofing (not saturated felt) are recommended, actual weight of roofing to be not less than 35 pounds (this does not include nails and cement which are ordinarily included in the weight of roll roofing) nor more than 45 pounds actual weight per 108 square feet. The best grade of roofing asphalt is recommended. The first layer of roofing should be laid at right angles to the incline of the roof deck; the second layer parallel with the incline of the roof deck, and the third layer at right angles to the incline of the roof deck. This eliminates wrinkles and buckles to a large degree if, of course, the asphalt is the proper grade and the roofing material is right and the work is carefully done so that a perfect bond is obtained leaving no air pockets or unbonded spaces between the sheets. A flood coat of asphalt is then applied to the surface and clean, screened, dry gravel is embedded in the asphalt while hot. All surplus gravel is then swept off and another flood coat of asphalt applied into which, while hot, is embedded approximately 300 pounds of clean, screened, dry roofing gravel. Removable wooden platforms are then laid over the gravel finish and painted any color desired to harmonize with the general color scheme. These platforms may vary in size from 3 to 5 feet wide and may be any length desired. Usually 2x4 sleepers with the 4 inch space resting on the gravel are used, set on 18 or 24 inch centers and straight edge boards or slats from 3 to 6 inches wide (as desired) are nailed on the sleepers and spaced, say, ¼ of an inch apart.

Method No. 4: If still cheaper construction is desired for use over either concrete or wooden decks the same method of roof construction as outlined in Method No. 3 may be successfully used with the following changes: Omit the flood coat of asphalt and gravel surface and embed as a wearing surface one layer of extra heavy high grade roofing, weighing 75 pounds per square, in hot asphalt over the underlying sheets. This roofing may be cut in small sections not to exceed 6 feet in length (the roofing is 3 feet wide) and set ⅛ inch apart for expansion purposes. Extreme care must be used in the setting of this roofing to see that no asphalt is carried over on the surface or finish. A clean surface and finish should be insisted upon.

Method No. 5: If still cheaper construction is desired over either concrete or wooden decks and if there is no objection on the part of the architect or his client to a gravel finish it is absolutely safe to follow Method No. 3 except that particular care must be given to the selection of the gravel and to see that it is thoroughly clean, thoroughly dry and of the proper size. The removable platforms may be omitted and it has been found in many cases throughout the entire United States that these roofs double-coated and graveled on the surface will withstand the worst kind of abuse. They have been used for playgrounds and all sorts of recreation purposes for periods as long as 20 to 30 years without any serious deterioration or damage caused by leaks.

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THOS. J. COLEMAN

Industrial Buildings

The ARCHITECT & ENGINEER

MARCH 1925

Published in San Francisco
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Published Monthly by
THE ARCHITECT and ENGINEER Inc.
626-627 Foxcroft Building-San Francisco
W. J. L. Kierulff, President
Frederick W. Jones, Vice-President
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REFINERY, FEDERATED METALS COMPANY, SAN FRANCISCO
MORROW & GARREN, ARCHITECTS

Frontispiece
The Architect and Engineer
March, 1925

THE
ARCHITECT
AND
ENGINEER

MARCH
1925

VOL. LXXX
No. 3

Thoughts on Modern Industrial Design

By EARL H. MARKWART, C. E.*

MANUFACTURING plants are special institutions for the assembly of materials to produce articles used by man in carrying on their existence, and in order to be successful they must be planned to perform their functions at a minimum of cost with a maximum of comfort to those who are compelled to spend one third of their life in the factory confines.

It is little realized just how much brain energy goes into a modern manufacturing establishment on the question of improvement or new construction. There are many conditions to be considered when any change is contemplated in order to make that change a success. Among these is the housing.

Manufacturers are coming to know that their grasp on the market depends upon production at a cost that their outlets can absorb and that wartime ideas of price can no longer be depended upon to help out. They are now compelled to manufacture under severe competition and with an advanced scale of wages for the workers. In attempting to solve the problem they are faced with the knowledge that wages will not, for a very long time, recede to any marked degree because the people, as a mass, now live on a more advanced plan; that foreign labor supply is restricted by immigration and also that education is taking many possible hands into other fields.

Thus the problem simmers down to creating a condition within the establishment tending to speed up movement of materials in process as well as speeding up of the workmen by giving them the best working conditions possible. These two points are the keynotes of modern factory design, changing absolutely the old idea of building four walls, a roof, and a floor and subordinating the routine to these restrictions.

We assume that supplies of raw material or other considerations, made of the routine of production in order to get the desired arrangement of storage for raw material, arrangement of machines and the position and extent of the stock and shapping areas, because the housing of these cannot be properly determined until this step is com-

*With Lindgren-Swinerton, Inc., San Francisco.

plete. Having decided the general plan or factory layout, it becomes necessary to settle upon the kind of building best suited to the needs of the owner.

In fixing upon the type of building which in turn determines the kind of materials and apparatus to be used, such points come up for consideration as the value of the products handled, both raw and finished, the process and its effects on materials of construction, climatic conditions, the amount of capital available, precedent and comfort and convenience of employees. Precedent has to some measure crystalized on the buildings that should be erected in any of the various industries, as for example, fire-proof structures are universal for factories that manufacture expensive products; due to the high insurance rates on both the buildings and the contents. Climatic conditions determine the heating system; ventilating systems are dependent both on climatic conditions and process of manufacture, but all steps taken are controlled by the amount of capital available and the comfort and convenience of the employees.

BUILDING FOR KLEIBER AUTOMOBILE COMPANY, SAN FRANCISCO
Richard Tum Suden and John Little, Engineers, Barrett & Hilp, Builders

The outstanding features of modern factory construction, of course, are the materials used to produce the completed structure. Reinforced concrete combines high fire resistance with flexibility, greater column spacing over wood also, permitting the use of flat slabs which interfere very little with light and which allow the use of both fixed and adjustable inserts for arrangement of machinery with the least cost for alterations. Structural steel has been largely eliminated except where high roofs of large span are desired, or where the loading or other determining factors, make the use of concrete uneconomical.

The use of steel sash permits large areas of glass with a minimum of light interference and a maximum of ventilation supplying better light by which the work may be carried on and more frequent changes of air for the health of the employees. There we have economy of construction, combined with comfort, to a marked degree and, indeed, the advancement of the sash has been such that practically eighty percent of the wall surface can be used for the ingress of natural light, not counting on a considerable portion of the roof areas.

The balance of the wall areas can be decorated by the use of face brick or cast cement to create artistic effects. Beauty has its effect upon the workmen as they like to be connected with an institution which takes pride in its appearance. Employers seem to lose sight of the fact that the quality of the work the help turn out is much affected for the better by such artistry. It is noteworthy in this connection that the added cost of an artistic facade is very small and that a fine appearing building can be produced with the use of a few colors and an added line or two to the cornices.

The parts of the factory receiving the greatest wear and causing the greatest trouble are the floors. A proper criterion for a good floor should be resistance to wear of trucks, dust proofness, noiselessness and resistance to the materials used in manufacturing, as well as comfort for employees. Many types of floors are now available, among which are the waterproof, dustproof, hardened concrete; the durable waterproof, dustproof, noiseless wood block; the chemical-proof, waterproof, magnesite composition floor; the brick floor; the tile floor and

MACHINE SHOP, AMERICAN CAN COMPANY, SAN FRANCISCO
C. G. Preis, Engineer. Lindgren-Swinerton, Inc., Builders

the mastic floor. Each has its advantages and should be used with discretion.

Among other items used in modern factories to hasten production and to aid the comfort of employees is the introduction of proper light reflecting, washable paints, fire-resisting door construction, fool-proof elevators with truckable automatic doors and such similar devices, together with the use of special high efficiency electric light unit.

One other element now enters in all well organized industrial institutions, and that is employees' conveniences. These consist of first-aid equipment, sanitary conveniences, lunch and rest rooms. In these departments we have the use of tile floors, steel toilet partitions, up-to-date plumbing fixtures designed particularly for factories, and wicker factory furniture. Managers find that it is a good investment to provide these comforts since they attract the better class of workers.

It is true to some degree that the above features have increased the cost of buildings, but on the other hand the long life provided by their

use cuts down the cost of maintenance and provides the advantages of increasing production as well as lessens the fire hazard.

A further phase, but a very important one, is the tendency for factories that are sufficiently large to go to a locality where transportation is suitable and where raw materials are obtainable and there erect not only the factory proper but all of the housing and community requirements for its people. This step, while somewhat determined by other considerations, really has as its base the desire to remove the labor from competition of other institutions and to permit a workman to own his own fireside at a minimum cost. The manufacturer arranges a time payment plan that costs no more than rent and encourages the development of family life, thereby benefitting all concerned. A contented employee, experience has demonstrated, works for a higher standard of efficiency.

BUILDING FOR GRINNELL COMPANY, SAN FRANCISCO
The Austin Company, Builders

Industrial Flooring Materials

By CHARLES A. WHITTEMORE,
Blackall, Clapp & Whittemore, Architects, Boston, in Architectural Forum.

IN industrial buildings the problem of construction is complex. Foundation must support the buildings without undue settlement. Walls must support the superimposed loads without distortion. Floors must be sufficiently strong to carry the dead and live weights without deflecton or vibration, and the surface must not disintegrate. In connection with this last condition the problem presents difficulties which are not easy of solution. There are so many different kinds of floor surfacing on the market that one could confer with a continuous stream of representatives, each with merit to his claim that his material will meet the requirements.

If it were possible to obtain the ideal floor surface it would be wearproof, dustproof, waterproof, and inert. These qualities are all important in industrial buildings, and in many cases the lack of these characteristics will mean losses in the manufacturing process. Wearing down of floors necessitates repairs; dusting ruins machinery; absorption de-

stroys the strength of the floor, and "non-inert" floors by cracking, swelling or shrinking may affect the allignment of machines as well as causing unevenness in the surface. The floor treatment which meets all these conditions will be a wonderful discovery. Boiler plate is in many ways unsatisfactory. Marble wears out; wood rots, etc. It seems as though natural products would not be as satisfactory as manufactured floor materials might be.

In mill construction maple floors present a good wearing surface and have long been considered satisfactory for most places where wood may be used. There are now on the market wood flooring materials treated with preservatives for which much is claimed. There are also wood floorings in block form, some of them so arranged that the wear all comes on the end grain, and this grain arranged so as to vary its direction. Each serves its purpose and specific place. There is no other

BUILDING FOR STANDARD DIE & SPECIALTY CO., BERKELEY
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natural flooring material which can be generally used. Expense or lack of durability prohibits. The net result of such a decision is that investigations must be conducted in the field of manufactured materials.

The broad divisions of manufactured floorings are cement, composition, and linoleum. Because most industrial buildings nowadays are of fireproof construction, the concrete floor as a base for surfacing is the most common. The concrete with a top surfacing becomes practically inert and is homogeneous, and can be made waterproof, but, on account of the nature of the material, concrete in itself is full of voids which have not the resistance to abrasion of a solid material. To make concrete "wear proof" it seems necessary to fill the voids. This may be accomplished by using as the final surface dressing a mixture of neat cement and fine sand. If such a mixture be well troweled or rolled with heavy rollers a surface will be produced which will resist wear under some conditions.

A surface as just described would be suitable for industrial buildings where the trucking is light. It must be borne in mind, however, that machinery produces vibrations which, while not noticeable to the casual observer, continually react on the floor construction and loosen

particles of the cement and sand in the form of a fine, almost impalpable, powder. To make such a surface dustproof can be accomplished only by the use of some agency having the property of binding the particles more closely than the natural cohesion can bind them, or by causing a chemical reaction which will increase the abrasion resistance. There are liquids for surface treatment or integral mixing which are manufactured for this purpose. There are oils which, upon oxidation, fill the voids and bind the microscopic particles into a mass of great density. There are metallic substances which, when mixed with the top surfacing, present the wearing qualities of iron. All these have their adherents.

Experiments have been conducted in the use of terrazzo, so-called. This is a top surfacing of cement, sand and crushed stone or marble, trap rock or other hard wearing surface. The results of these experi-

BLINDCRAFT BUILDING, SAN FRANCISCO
Henry H. Meyers, Architect. Barrett & Hilp, Builders

ments would seem to indicate that this kind of cement floor surface is satisfactory even under trucking conditions. This type of floor has been made up using ceramic chips instead of marble. Such a floor will stand hard abrasion.

The general method of laying any cement type of top surfacing is the same as for granolithic. It may be well to call to mind a few of the essential steps:

1st. See that the floor to which the top surface is to be applied is thoroughly roughened and cleaned of all dust and loose particles.

2nd. For the best results the floor should be washed with clean water and be in a damp condition before the leveling material is deposited.

3rd. Level off to fixed screeds, and see that surface is even and true.

4th. Before this material has become too firmly set, deposit the final surfacing and roll or trowel with steel trowels.

When aggregates of any kind are mixed in the final surfacing they should be laid on the leveling course in an even layer and thoroughly rolled or troweled in. A floor made up of this type should prove to be a very satisfactory investment for the owners of an industrial building where the trucking and service are heavy.

Many of the composition floors have some cement as a base, but the proportion is so small that they cannot be classified as cement floors. Magnesium salts, calcium salts, wood and asbestos fiber, sodium silicates, sawdust and silex all are used in the preparation of composition flooring. In considering a floor of this class one must know that after the chemical action is completed the mass becomes inert, non-absorbent and not affected by climatic changes. It is, therefore, desirable to select

BUILDING FOR MONTGOMERY WARD & CO., OAKLAND
W. H. McCaully, Architect and Engineer

a floor with the least vegetable content. Sawdust and wood floors may decay, hence too large a proportion of either of these is detrimental. They are also the cheapest components, and are serviceable principally as "fillers" to make more "body" to the composition. They do, however, act as buffers between the more solid particles, giving resilience to the floor and also imparting a tendency to prevent sound transmission.

Composition floors have a peculiar characteristic in that when struck with a solid substance they sound hard. When walked upon they feel anything but hard. Such flooring material will give good service under ordinary trucking conditions and will be found very comfortable for employees to stand upon. For heavy trucking or for situations where metals or cases are dropped, such a floor would not be ideal unless designed and laid with special care.

The majority of composition floors vary in thickness from $\frac{1}{2}$ inch to $1\frac{1}{8}$ inches, and can be laid over wood or concrete. This is a distinct

advantage over cement type floors which cannot be used in thickness less than $1\frac{3}{4}$ to 2 inches. A floor of this type may, therefore, be laid over an old floor of wood or cement without disturbing the old surface. This necessitates at times changes in doors, etc., but in no case is the extent or expense of such a procedure comparable with what would be required if a cement type floor were to be used.

The "mastic" floors are composition floors, but of a different type from those previously described. Asphalt, asbestos, cork, wood floor, or other materials enter into the makeup of the floors. Marble chips, quartz, etc., are used where the floor must resist abrasion. These floors are laid in a variety of ways: some under heat, some in successive "building up" layers, and come in a plastic mass. The "mastic" type floors are never supposed to harden to the consistency of a hard cement. Part of their value lies in the resilience of the medium itself. Dents automatically iron themselves out and real damage, such as cracks or badly worn places may easily be repaired. This type of floor is used in warehouses, on shipping platforms, in factories, etc., and is impervious to moisture.

One point in the construction of industrial building always gives trouble, and that is the proper and adequate arrangement of hangers and supports for pipes, shafting, etc. This is a real problem and reduces itself only with difficulty to a common rule for all buildings. The engineer must know all the requirements for the building and should have all the contracts under his control in order to provide support for future demands as the construction proceeds. It is simple enough to lay out hangers for steam, water, gas, electric, sprinkler pipes, and also for shafting, etc., if these are all decided upon sufficiently in advance. The real difficulty lies in anticipating future needs as developed by changes in machinery, etc., as well as by the increase business or manufacturing demands. There are various types of hangers which may be used in connection with concrete floors for pipe supports. Obviously, the best is the hanger which permits of adjustment of the point of support. Such a hanger will enable the builder to change locations of pipe lines without tearing up concrete. All these types are arranged to be set in on the forms, and some are equipped with integral reinforcing rods to allow for extra heavy loads and more even distribution. Some are arranged to be attached to the reinforcing rods. Use of any type which is easily set in place, which is securely held in the construction, and which allows adjustment of support spacing is a distinct asset to the building.

A discussion of floor construction is not complete without considering the stair and platform treatments. Here is great wear. In the average industrial building the employees use the stairs more than the elevators, unless the building is more than four stories. Hence twice, and generally four times, per day the stairs are called upon to withstand the wear incident to the passing of a number of people. On the treads, therefore, must be a wear resisting, durable, non-absorptive non-slip material. Terrazzo, ceramic, cement, composition as well as slate, marble and steel all are used for the tread surfaces.

There are, of course, the standard safety treads composed of a metal base grooved with non-slip material filled in the grooves, and also metal with steel filings or carborundum fused in the wearing surfaces, also other variations on the basic principles of these two types. Where marble, slate or metal is used as the tread, a safety edge should

BUILDING FOR WILLIAMS BROS. AIRCRAFT CORPORATION
E. H. Markwart, Engineer

be provided and **set in place.** Where the plastic materials are used, these treads may be cast with carborundum or steel filings, mixed in the top surfacing or troweled in the surface as the "set" begins to take place.

Floors like facts are stubborn things. Once in place they are not easily moved. When we consider the floor, not as the walking surface alone, but as the support for machinery above and possibly below; when we realize the pipes, conduits, hangers, inserts, shafting and all the equipment units which the floor must contain or hold in place, we cannot but feel that however much care, study and thought we give to the selection and arrangement of materials, a satisfactory floor, standing up to its demands, is a well worth while reward.

* * * *

Metal Lath Resists Earth Shocks

The lessons brought home to architects and builders by the earthquake shocks in Eastern cities on February 28th confirm with startling precision those learned from the 1906 temblor in San Francisco, the 1920 quake in Inglewood, California, and more recently, September, 1923, the devastation of Japan.

When the first terror of the San Francisco earthquake and fire had subsided and engineering and construction experts were able to examine the structures which remained and the ruins of others, it was found that metal lath partitions and ceilings, because of their inherent resilient reinforcement, were intact and had prevented the passage of fire where plaster on other materials had dropped off, either exposing structural members to the direct action of fire, or had collapsed permitting fire to sweep from the bottom to the top of the structures.

A few years later, Daniel H. Burnham, Jr., Chicago architect, at that time a Captain of the U. S. Army, was one of a group of government engineers sent as a board of investigation to report the nature and extent of the damage caused by the quake. Despite the fact that large quantities of metal lath had been used in the earthquake area, the engineers' report showed no cases where plaster had fallen off of metal lath.

Reports from towns where the February 28th shocks were most severe are most favorable for metal lath construction.

BUILDING FOR WESTINGHOUSE HIGH VOLTAGE INSULATOR COMPANY, EMERYVILLE
E. H. PRACK, ARCHITECT

BUILDING FOR WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, EMERYVILLE
B. H. PRACK, ARCHITECT

Dinwiddie Construction Company, Builders

SOUTHERN PACIFIC TERMINAL BUILDING, SAN FRANCISCO
BLISS AND FAVILLE, ARCHITECTS

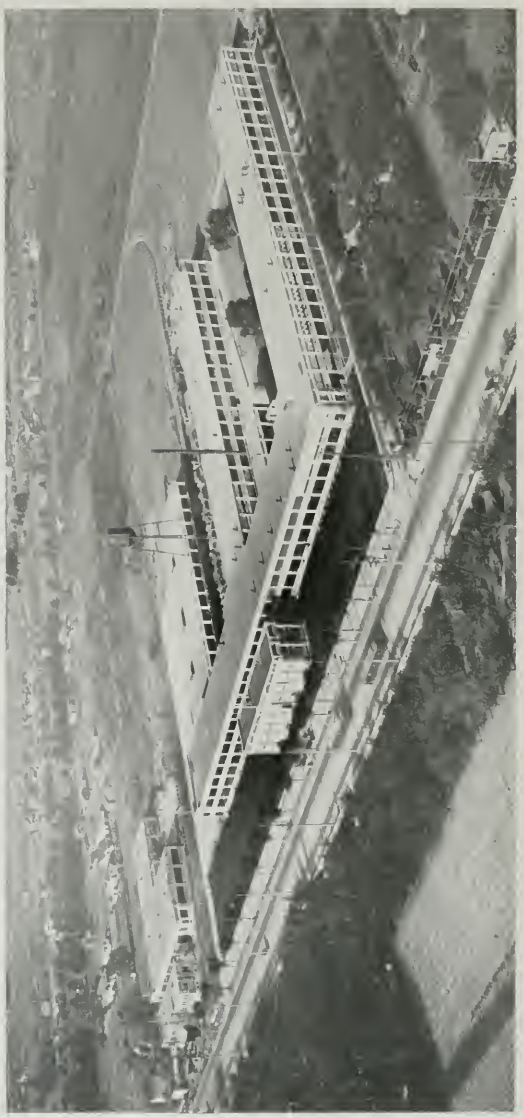
Dinwiddie Construction Company, Builders

SOUTHERN PACIFIC TERMINAL BUILDING, SAN FRANCISCO
BLISS AND FAVILLE, ARCHITECTS

CALIFORNIA & HAWAIIAN SUGAR REFINING COMPANY, CROCKETT
ENGINEERING DEPARTMENT OF COMPANY, DESIGNERS

Lindgren-Swinerton, Inc., Builders

BUILDING FOR STANDARD UNDERGROUND CABLE COMPANY, EMERYVILLE
B. H. PRACK, ARCHITECT



AIRPLANE VIEW OF DURANT MOTOR COMPANY FACTORY, OAKLAND
H. J. BRUNNER, ENGINEER P. J. WALKER CO., BUILDERS

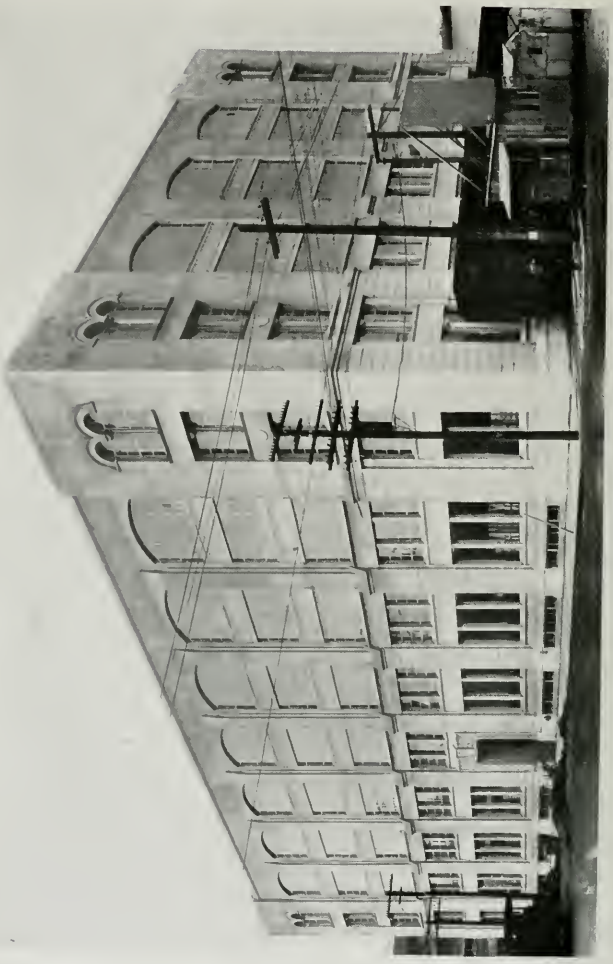
Photo by G. E. Russell

George Wagner, Builder

BUILDING FOR THE WHITE COMPANY, SAN FRANCISCO
HENRY H. GUTTERSON, ARCHITECT

BUILDING FOR WINCHESTER-SIMMONS COMPANY, SAN FRANCISCO
H. C. BAUMANN AND EDWARD JOSE, ARCHITECTS

NEW PLANT OF PACIFIC PORTLAND CEMENT COMPANY, REDWOOD CITY
W. C. STEVENSON, ENGINEER

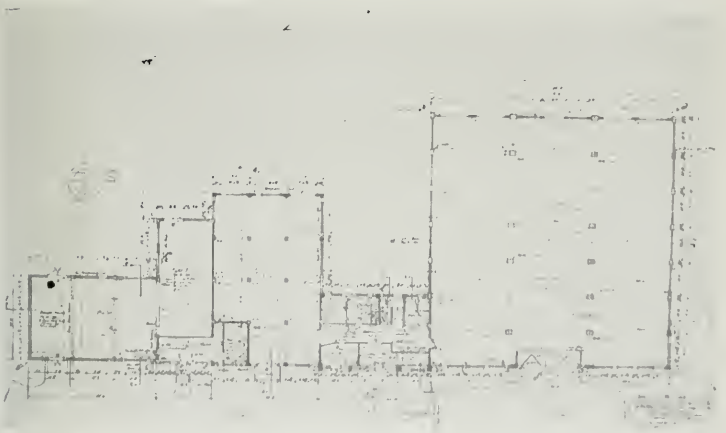


BUILDING FOR STANDARD SANITARY MFG. COMPANY, SAN FRANCISCO
WEEKS AND DAY,
ARCHITECTS

ENTRANCE, STANDARD SANITARY MFG. COMPANY'S BUILDING, SAN FRANCISCO
WEEKS AND DAY, ARCHITECTS

ENTRANCE, BUILDING FOR THEME HOSIERY COMPANY
LOCKWOOD GREENE & CO., ENGINEERS

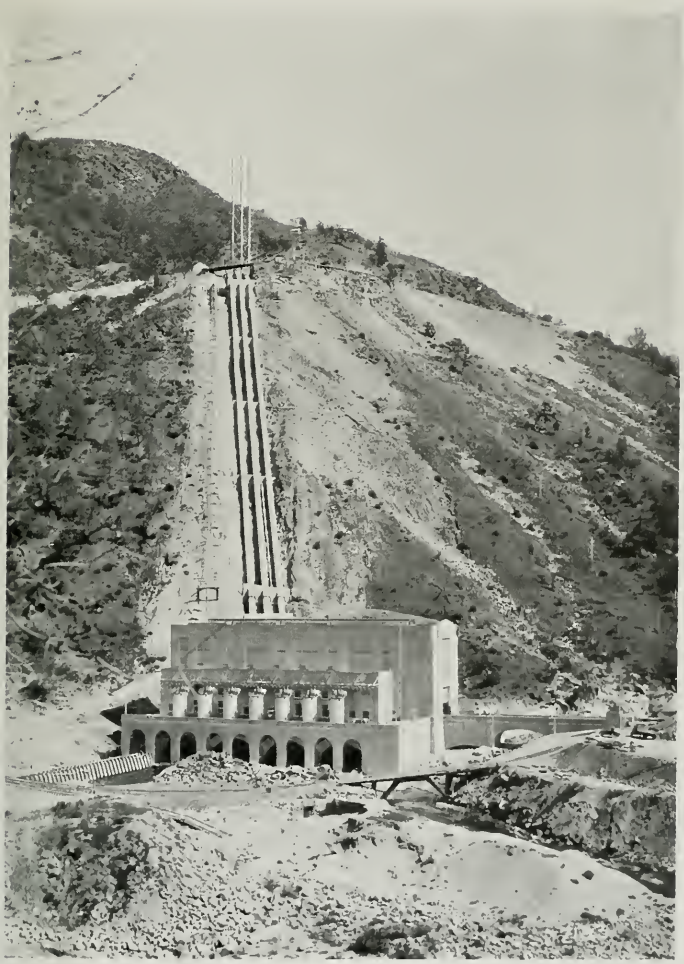
BUILDING FOR THEME HOSIERY COMPANY, LOS ANGELES
Lockwood Greene & Co., Engineers



FIRST FLOOR PLAN, BUILDING FOR THEME HOSIERY COMPANY, LOS ANGELES
Lockwood Greene & Co., Engineers

ENTRANCE TO MARKET YARD, WHOLESALE TERMINAL, LOS ANGELES
John Parkinson and Donald B. Parkinson, Architects

AIRPLANE VIEW, WHOLESALE TERMINAL, LOS ANGELES
John Parkinson and Donald B. Parkinson, Architects



BIG CREEK NO. 3 POWER HOUSE, SOUTHERN CALIFORNIA EDISON COMPANY
LOS ANGELES, CALIFORNIA

LAGUNA BELL SUBSTATION, SOUTHERN CALIFORNIA EDISON COMPANY, LOS ANGELES

KERN RIVER NO. 3 POWER HOUSE, SOUTHERN CALIFORNIA EDISON COMPANY

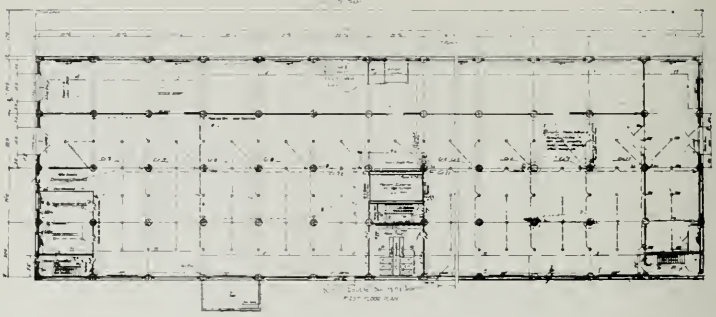
SPERRY FLOUR MILL, VALLEJO
Maurice C. Couchot and Jesse Rosenwald, Architects

SPERRY FLOUR MILLS, OGDEN, UTAH
Maurice C. Couchot and Jesse Rosenwald, Architects

BUILDING FOR GARNETT YOUNG AND COMPANY, SAN FRANCISCO
K. E. Parker Co., Builders

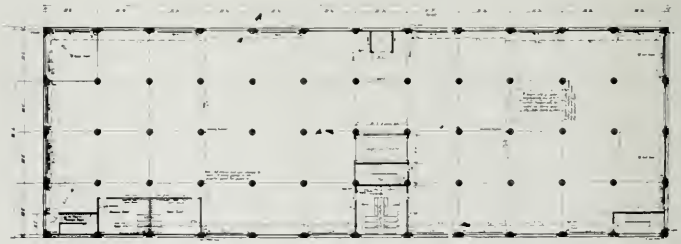
ALTERATIONS, WHOLESALE BUILDING, SAN FRANCISCO
S. Heiman, Architect

LOBBY, NATIONAL CARBON BUILDING, SAN FRANCISCO
MAURICE C. COUCHOT AND JESSE ROSENWALD, ARCHITECTS



FIRST FLOOR PLAN, DOBLE MOTORS COMPANY, EMERYVILLE
E. H. Markwart, Engineer

BUILDING FOR DOBLE MOTORS COMPANY, EMERYVILLE
E. H. Markwart, Engineer. Lindgren-Swinerton, Inc., Builders



SECOND FLOOR PLAN, DOBLE MOTORS COMPANY, EMERYVILLE
E. H. Markwart, Engineer

TYPICAL FLOOR, FACTORY FOR PACIFIC COAST BORAX COMPANY, WILMINGTON
Albert C. Martin, Architect

Pacific Coast Borax Plant a Notable Industrial Achievement

AN interesting problem in combining utility and efficiency for a definite purpose, with a pleasing appearance architecturally, was involved in the construction of Pacifific Coast Borax Company's new plant on Mormon Island, Los Angeles harbor. The plant consists of a refinery building, power house, transit shed and office building. The two latter are of light steel frame construction erected on the company's wharf, while the former are both reinforced concrete Class "A" buildings.

Preliminary study had to take into account the great bulk and weight of the material to be handled in the plant, and resulted in the planning and erection of a three-story refinery building, with provision for additional stories and for extension at both ends. The present building is roughly 300 feet by 250 feet, and is of flat slab construction, with minimum panels of about twenty feet.

The architectural treatment was handled in such a way as to provide for extension in both horizontal and vertical planes. The treatment consists of end pavilions, two bays wide, with a heavy belt course at the second floor level and a temporary cornice below the present roof. The principal feature consists of the firm name and that of its product cast in solid concrete letters four feet high on each elevation.

Test loads indicated the necessity for a pile foundation and more than 3,000 cedar piles were driven to carry the refinery, power plant and 150 foot concrete stack. These were driven in clusters and cut off below the saturation level of the soil before being capped with reinforced concrete.

In order to secure a maximum of efficiency in the operation of the various departments, much preliminary work was done by the architect in developing the ideas of the Pacific Coast Borax Company's engineers. This study established the column centers, the location of service stairways and elevators, the story heights, the fenestration and the location of the large number of openings required for chutes, piping, and elevating machinery. To provide for maximum flexibility in the

FACTORY FOR PACIFIC COAST BORAX COMPANY, WILMINGTON
Albert C. Martin, Architect

possible relocation or addition of piping or machinery, a large number of inserts were placed in all ceilings.

All material used in the plant is of the best obtainable quality. Particular care was used in the protection of metal surfaces from the salt air. All skylights and metal ducts above the roof are of patented weather resisting material, and other iron work is galvanized wherever possible.

The present roof will be the future fourth floor, and was completely finished as such. This provided a perfectly level surface with an area of more than 75,000 square feet to be covered with roofing. To protect the finished floor three-foot wide paper strips were securely pasted down in each direction on the column lines, and around the projections for future columns. The first layer of roofing felt was then mopped on the paper strips only, and the remaining layers were mopped solid.

The New Chronicle Building, San Francisco

By IRVING F. MORROW

Mission Street from Tower of Chronicle Building

IN its new building at Fifth and Mission streets the San Francisco Chronicle presents not only one of the most complete newspaper publishing plants in the United States, but one of the most attractive examples of industrial architecture as well.

The time has passed when a great metropolitan newspaper could be issued from the basement and a few rooms in an office building. Today it is a veritable manufacturing problem requiring a manufacturing plant. The operations have become so complex, the processes so numerous and technical, the number of employees so great, the sheer bulk of paper and other materials handled so huge, that if everything is to be managed efficiently the whole must be carried out in a building designed especially for the purpose. Messrs. Weeks & Day have given special study to the question of newspaper manufacturing throughout the country, and the new Chronicle building therefore embodies all that has been found valuable in recent experience and represents the latest advances in the solution of the problem.

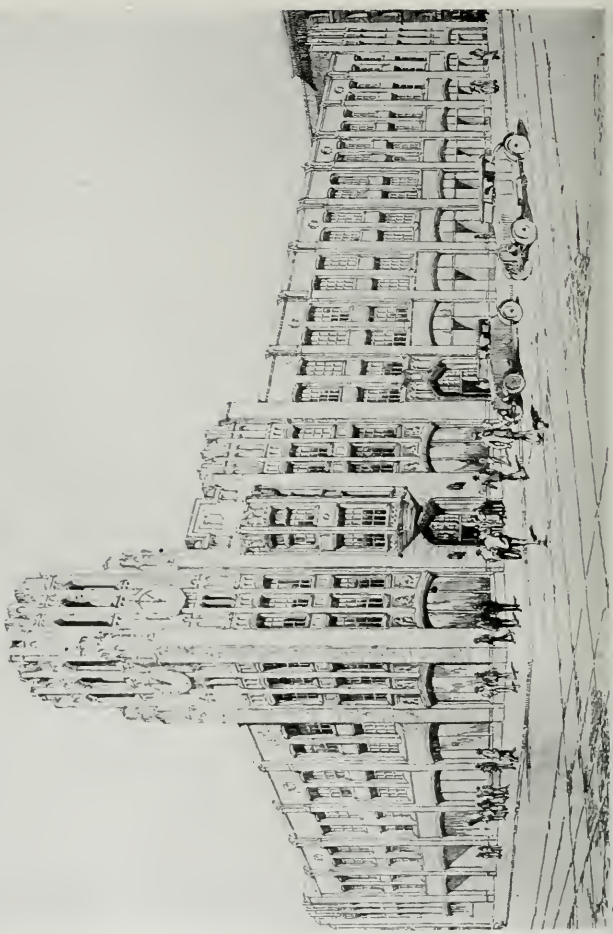
Experience has shown that, for the greatest advantage, a newspaper plant should spread horizontally rather than vertically. The new Chronicle building therefore builds low over a large floor area. Related departments are thus kept adjoining, and the whole complicated organism has been so worked out that the routing of material is direct and continuous from the start in the editorial rooms to the finish with the mailing and dispatch of the completed papers. Special attention has been given to all mechanical devices calculated to facilitate the process, such as mechanical conveyors, etc. No detail has been neglected, either in the handling of the manufacturing itself, or in provision for the comfort and welfare of employees. The building occupies a square block, and with the exception of stores along Mission street, the entire three stories and tower are given over to the purposes of the newspaper. It is also built so that additions are possible.

But it is by no means only in mechanical respects that this building is worthy of note. Equal care and attention have been expended on the architectural design. The exterior and the public offices are worked out in Gothic, with careful balance between the claims of utility and of beauty. A manufacturing plant demands a high degree of sobriety and directness in its treatment; and yet a large metropolitan newspaper is in effect a sort of semi-public institution, calling for the expression of a certain amount of disinterested grace. A judicious balance has been struck between the utilitarian and the artistic claims.

Whenever a commercial enterprise builds or furnishes quarters of distinct artistic merit, "practical" people always feel under obligation to offer an explanation which squares with a conspicuously utilitarian outlook on life; and it is thereupon put forward as demonstrating that "beauty pays." Is it necessary to go out of one's way for a pecuniary justification in order to escape suspicion of sentimentality? Does beauty always "pay"? In some instances it may, but not necessarily always. It is very questionable if the architectural merits of the Chronicle's new building will be turned to monetary account on the company's balance sheet. It is even questionable if it was undertaken with any such conscious end in view. It is significant, not in demonstrating a commercial thesis, but simply by way of showing that we are becoming more civilized. Nobody will make more money out of it; but life, for all who come in contact, will be more worth while. This is no insufficient reason; and it is, in fact, actively operating.

NIGHT VIEW, CHRONICLE TOWER, SAN FRANCISCO
WEEKS AND DAY, ARCHITECTS

DETAIL OF TOWER, CHRONICLE BUILDING, SAN FRANCISCO
WEEKS AND DAY, ARCHITECTS



PERSPECTIVE, CHRONICLE BUILDING, SAN FRANCISCO
WEEKS AND DAY, ARCHITECTS AND ENGINEERS

K. E. Parker Company, Builders

LOBBY, CHRONICLE BUILDING, SAN FRANCISCO
WEEKS AND DAY, ARCHITECTS AND ENGINEERS

BUSINESS OFFICE, CHRONICLE BUILDING, SAN FRANCISCO
WEEKS AND DAY, ARCHITECTS AND ENGINEERS

CLERICAL FORCE, BUSINESS OFFICE, CHRONICLE BUILDING
WEEKS AND DAY, ARCHITECTS AND ENGINEERS

LIBRARY, CHRONICLE BUILDING, SAN FRANCISCO
Weeks and Day, Architects and Engineers

EDITORIAL ROOM, CHRONICLE BUILDING, SAN FRANCISCO
Weeks and Day, Architects and Engineers

A Successful Combination of Art and Utility

By BOARDMAN PICKETT

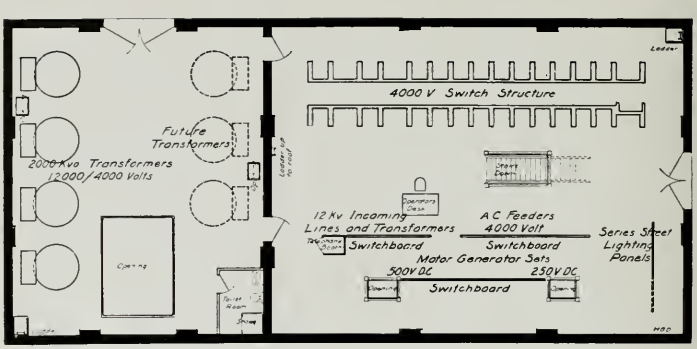
THE problems connected with the placing of an industrial or a commercial structure in a fine residential section often seem insurmountable. Property owners object to distracting noises in the vicinity of their houses; they object to the atmosphere created by business or industrial activities; they object to the appearance of architecture that is not in itself artistic. Popular disapproval may result in an injunction forbidding the erection of an objectionable building. And since it frequently happens that an industrial or a business concern finds it highly desirable to establish quarters in residential districts, it is worth while to consider ways and means of so combining art and utility as to produce architectural structures that may be objects of neighborhood pride rather than subjects for unfavorable comment.

Sub-station C of the San Diego Consolidated Gas and Electric Company is an interesting example of what can be done along these lines. When the company first decided to place a sub-station in the residential section where the building now stands, plans were carefully laid to erect such a structure as would give no just cause for complaint. With the assistance of Requa and Jackson, Architects, a solution of the problem was worked out which, we understand, has proved to be satisfactory from all points of view.

As a model for the sub-station the architects selected the Casa de Dona Maria La Brava, found in Salamanca, Spain. This castle dates from the fifteenth century and is considered notable for its simplicity and purity of line. Those who selected the model felt that from an architectural point of view, at least, no reasonable objection could be made to the erection of a similar building in the proposed neighborhood. Moreover, the Spanish style of architecture is so well suited to the climate and the topography of California that it can pretty safely be relied upon to harmonize with residences which are likely to be built in the district.

The decorations on the facade of the Gas and Electric building have been skillfully adapted from those on the facade of the Casa de Dona Maria La Brava, so as to retain the artistic Spanish features and at the same time suggest the utilitarian purpose of the structure. In place of the Spanish design above the central window the architects used the initial letters of San Diego Consolidated Gas and Electric Company, with the insignia worn by employees of the company and used to represent the company on all signs and letter-heads. The shield at the left of the balcony shows a symbolic design for gas, the shield at the right represents electricity. The raised decoration surrounding these designs, and the balconies seen at the front and side windows of the building, were copied from those of the Salamanca castle. The stone arch treatment above the doors was also suggested by the Salamanca castle, but the doors themselves were copied from other Spanish buildings, since they were considered more interesting and attractive than those on the Casa de Dona Maria La Brava.

The outside surface of the building is of stucco, with joints cut in by hand and with pieces chipped off here and there so as to simulate the effect produced by the walls of the old Spanish castle. Effective outside lighting makes the structure an object of special interest at night. Floodlights concealed in the shrubbery around the base of the

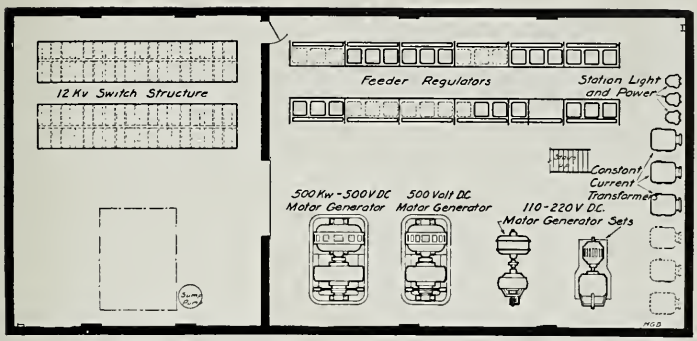


MAIN FLOOR PLAN, SUB-STATION C., SAN DIEGO CONSOLIDATED GAS AND ELECTRIC CO.
Requa and Jackson, Architects

building produce strongly contrasting lights and shadows on the walls, giving the building a more or less romantic, "Old World" appearance.

The style chosen for the Gas and Electric building is remarkably satisfactory from the point of view of utility. Following the general characteristics of Spanish architecture, the Casa de Dona Maria La Brava calls for very few openings in the outside walls, and this feature is particularly desirable in cases where the noise of machinery must be kept from disturbing a neighborhood. The few windows to be seen in the Gas and Electric building are false openings which are cut through

SUB-STATION C., SAN DIEGO CONSOLIDATED GAS AND ELECTRIC CO.
Requa and Jackson, Architects


12 Kv Switch Structure
Feeder Regulators
Station Light and Power
Constant Current Transformers
500 Kw - 500 V DC Motor Generator
500 Volt DC Motor Generator
110 - 220 V DC Motor Generator Sets
Sump Pump

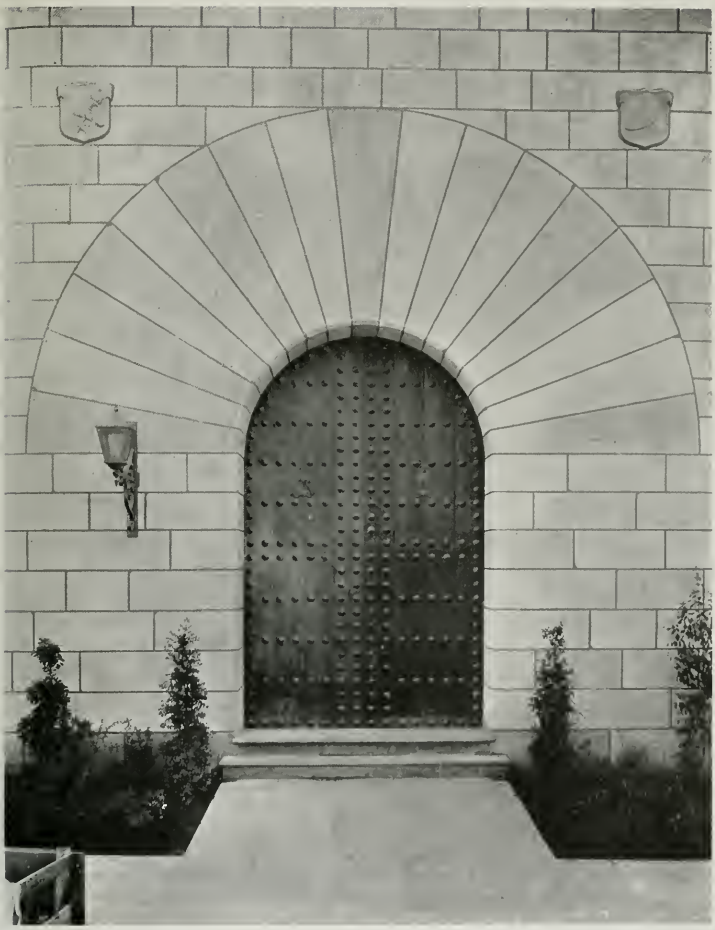
PLAN OF BASEMENT, SUB-STATION C., SAN DIEGO CONSOLIDATED GAS AND ELECTRIC CO.
Requa and Jackson, Architects

the outer surface alone, leaving the inside wall intact. The only outside openings for light and ventilation are through the roof. Skylights are placed to slant upward toward the middle of the roof, and the openings are so arranged that sound waves are deflected to the center of the building. Special attention has been given to machinery foundations, so as to minimize noise and vibration as much as possible.

The large doors of the Gas and Electric building are very effective from an architectural point of view, and at the same time they serve the utilitarian purpose of providing openings sizable enough to admit

NIGHT VIEW, SUB-STATION C., SAN DIEGO CONSOLIDATED GAS AND ELECTRIC CO.
Requa and Jackson, Architects

CASA DE DONA MARIA LA BRAVA, SPAIN, FROM WHICH SUB-STATION OF SAN DIEGO CONSOLIDATED GAS AND ELECTRIC CO. WAS COPIED WITH ADAPTATIONS
REQUA AND JACKSON, ARCHITECTS



SUB-STATION C., SAN DIEGO CONSOLIDATED GAS AND ELECTRIC COMPANY
SAN DIEGO, CALIFORNIA
REQUA AND JACKSON, ARCHITECTS

bulky pieces of machinery. The side door is over fifteen feet high, with a man-size opening for every-day use. Both front and side doors are heavily studded, thus ensuring durability as well as presenting an artistic apearance.

Of the arrangements inside the building several might be mentioned which are designed to increase safety or convenience: A large airshaft in the corner of the main room has a suction fan at the top, on the roof. Air is sucked down to the basement, carried all over the basement, and allowed to rise through openings in the floor to the main part of the building. As the hot air rises to the ceiling it is whirled out-of-doors by four electric fans placed in openings along the middle of the roof. Machinery is concentrated in the basement, thus minimizing the probability of disturbing the neighborhood with noise. In the rear of the main floor is a vacuum system for cleaning the machinery. The large side door can be lifted out when it is necessary to use the crane to hoist bulky machinery, and the apparatus can be dropped into the basement through an opening in the floor.

* * * *

Every Architect and Draftsman a Salesman

IN the August issue of The Charette, published by the Pittsburgh Architectural Club, there is a letter addressed to the editor, from which we quote as follows:

"For example, how does the general public know that a trained architect can plan even a small house more skillfully than the contractor or someone else in the contractor's class?

"If the writer is not mistaken, the general public has exactly the opposite impression. We fancy that nine out of ten men in the street believe that any contractor of experience can design a more practical house and for considerably less money than any architect. It seems to us that the reason for this state of affairs is that the architects are exceedingly indifferent in the matter of educating the public to the real facts."

In slightly modified forms this same story comes to us from various parts of the country, sometimes from architects and sometimes from members of the drafting fraternity who are working toward architecture as their life work and who are disturbed by the lack of appreciation of the value of professional services as manifested by the general public and as affecting their future professional careers.

We recently heard of a city of some sixty thousand where the average architect's fee, including full service, is 3%. We asked one of the architects located there how it happens that such an inadequate scale of compensation prevails. His answer was that the clients would not pay more, that if the architects did not take the work on at that basis, there wouldn't be any architect. In other words, the jobs would go direct to the builders, and professional services would be entirely dispensed with. What's the matter with that town and lots of other towns and why do similar conditions prevail on an enormous volume of work even in the larger cities? There is no use quarreling with your public. It doesn't do any good to say the owner is a fool and ought to know better. If he does not know better, and does not more fully realize that a competent architect can save him money and give him a better building than he would otherwise get, the blame lies squarely with the architectural profession and not with the client. In our editorial which appeared in the August issue entitled "Selling Architecture", we suggested one means whereby the architect, which includes the draftsman, may improve his standing as an economic factor in the

community. There is another way in which this situation may be improved. Every architect and every architectural draftsman who has the good of his profession at heart must take off his coat and become an active, aggressive selling force for the benefit of the entire profession. There are many things that may be done—all coming within the highest ethical standards and all perfectly legitimate, considered from the highest professional viewpoint. Contacts should be made either by clubs or individuals with the local newspapers; not in any sense to run down the builder, but to set forth for the consideration of business men and intending home builders the reasons (and they are many and clear) for employing an architect. A certain amount of time may be required to furnish articles or interviews for the press and in the preparation of drawings to be used as illustrations for such articles. But this time will be well spent. Those taking active part in this movement should work in a broad way for the better education of the community rather than to attempt to further their own individual interests. Contacts should be made with Chambers of Commerce, Rotary and other clubs, and organizations and lectures arranged designed to demonstrate that it pays from the dollars-and-cents standpoint to have a building well planned, well designed and carefully superintended; and that the money spent for the professional services involved will be reflected in initial savings, larger rentals, higher sales value and lower upkeep.

These problems have always faced the profession, and much good and earnest work is being and always has been done by many individuals and some organizations. The draftsmen as a class have never been conscious that this problem was their problem just as much as it is that of the boss, and they have not as a class been aware of the great good they could do in "selling" architecture. Every architectural club should actively consider this problem as part of its program. In many communities where clubs do not exist, groups of architects and draftsmen can and should get together to make definite plans to improve conditions in their particular community. The word "education" is worked to death, but what we are talking about is purely a matter of education and should be approached as an educational matter; dispassionately and without any feeling of pique or ill-will. We hear that Mr. Jones, the rich banker, has just let a contract for a fifty thousand dollar residence to a builder and is employing no architect. He has been told that an architect is a nuisance anyway, that he can save several thousand dollars by getting along without one and get just as good a house from the builder. No use getting sore about this, but you should see that this does not happen again in your town. All the Mr. Joneses by one means or another should be brought to know the truth. He really doesn't want a house done from a plan-factory book without any consideration of the peculiar needs of himself and family, without any thought of the site and without any of the other refinements which only an architect can give. He lets the contract to the builder because he doesn't know any better, and to stand by and watch him get into a mess and spend a lot of money he didn't expect to in getting out of it, should not be a source of satisfaction to any one.

Let every draftsman, especially, realize that his professional future, whether he ever opens an office for himself or not, depends to a certain measureable extent upon his efforts and the efforts of all the draftsmen to "sell" architecture in every legitimate way. The architect's problem is not quite as simple as that of other professional groups; doctors and lawyers, for example. If you have a pain, you go to a

doctor; if you get into legal difficulties, you go to a lawyer; the necessity for these professional services is understood by every one in a community. As stated above, the importance of the architect's services is by no means so universally appreciated. In remedying this situation, the initiative must be taken by the profession—nobody else will do it. But a tremendous amount can be accomplished if every architect and every draftsman will make a determined and patient effort to explain the value and importance of professional services in connection with all building operations.—Pencil Points.

* * * *

Paint Keeps Lime Plaster From Setting

That oil paint applied to the surface of fresh lime plaster has a decided tendency to hinder the setting of such plaster, is one of the conclusions drawn from a series of tests made by the Commerce Department's Bureau of Standards. The setting of the plaster results from the absorption of carbon dioxide from the air and the resulting change of the hydroxide, or slaked lime, into limestone.

This absorption of carbon dioxide is greatly hampered by the paint film, the bureau finds. It is retarded, but not seriously, by a finish coat, and takes place more rapidly in lean mortars than in rich. The combination of a finish coat with a film of oil paint on top of it was subsequently tried, and was found to prevent the absorption of carbon dioxide almost entirely, cubes of plaster in this way showing no appreciable penetration of carbon dioxide after a period of six months.

In all, 144 two-inch cubes were made for the test. Four different types of lime were used, and the mortars were made into three different proportions of sand and lime. Twelve cubes were made from each mortar, of which four were left as molded, four were covered with a white finish coat, and four were covered with an oil paint. One-fourth of the cubes were tested each month to determine the condition of the lime and the amount of carbon dioxide absorbed.

Building Material Prices on the Pacific Coast

Table showing average prices paid February 1, 1925, by contractors for building materials delivered on the job. These prices were secured through the United States Bureau of Census.

Commodities	Size or Condition	Unit	PRICES IN CITIES Los Angeles	Long Beach	San Francisco	Portland	Spokane	Seattle
Common brick		1 000	$13 50	$13 00	$16 00	$17.00	..	$16 00
Portland cement	Excl. of containers	Bbl.	2 60	2 60	2 83	3 00		2 50
Yellow Pine No. 1	Dimensions 2x4—16' S1S1E	1,000	. . .	. . .	. . .	. . .	. . .	. . .
Douglas Fir No. 1	Dimensions 2x4—16' S1S1E	1,000	35 50	.	30 00	22 00	25 00	20.00
Common boards No. 1	1x6	1,000	35 50	34 50	30 00	22 00	25 00	20.00
Douglas fir V. G. No. 2	1x4—10'-16'	1,000	66 00	.	68 00	55 00	70 00	54 00
Red Cedar shingles, extra clear	16" 5 to 2	100 sq. ft.	3 52	5 40	5 00	4.00	3.75	3 65
Composition shingles crushed slate surfaced		100 sq. ft.	. .	7 50	. .	. .	. .	. .
Gypsum plaster board	$\frac{3}{8}$"	1000 sq. ft.	40 00	35 00	45 00	38 00	. . .	35 00
Lime	HYD	Ton	26 00	30 00	. .	26 00	. . .	22 00
Building sand		Cu. yd.	1 75	2 65		2 00	. .	1 85
Crushed stone	$\frac{3}{4}$"	Ton	2 10	2 20	1 35	. .	. .	. .
Wire nails		Keg	4 00	4 45	4 00	4 50	3 60	4 10
Window glass	Single A 10"x12"	50 sq. ft.	4 64	.	3 70	5 00	3 84	4 00
Hollow tile	8"x12"x12"	Each	20	22	. . .	19	. .	20
Cast iron soil pipe	4" E.H. 13 lbs. per ft.	Ton	. .	. .	. .	96 00	95 40	94 00
Steel pipe	1" galv.	100 ft.	9 60	.	9 35	13 90	11 30	11 30
Reinforcement bars	$\frac{3}{4}$" square	100 lbs.	3 50	.	. .	4 00	4 00	3.50
Structural steel	Fab. 6" I beams	100 lbs.	5 50	.	4 00	5 00	. . .	6.00
White lead	Dry	100 lbs.	15 25	15 25	14 25	16 00	16 50	16.00
Zinc oxide	Am. process lead free	100 lbs.	12 50	17 00	17 00	19 00	14 00	15.50
Gypsum plaster	Neat	Ton	14 00	.	13 50	20 00	. .	21 00
Linseed oil	Raw, in bbls.	Gal.	1 42	. .	1 42	1.20	1 37	1 37
Tar paper, roofing 2-ply	75 lb. per roll of	100 sq. ft.	.	.	2 35	2 00	2 82	.
Rosin sized sheathing 3-ply	30 lb. per roll of	500 sq. ft.	1 90	.	.	1 30	99	1 50

"Mill Construction" for Industrial Buildings

By WILLIAM KNAPPEN

ARCHITECTS who deal with industrial buildings will find much to interest and instruct them in a brochure recently published by National Lumbermen's Association, Washington, D. C., under the caption, "Fire-safe Industrial Buildings." The book is essentially a plea for mill construction of industrial buildings but it is remarkable for its fairness and lack of denunciation of other forms of construction.

"Reasonable economy, structural efficiency, flexibility and fire-safety," says the pamphlet, "are of paramount importance when a new industrial building is erected or when an old one is remodeled or enlarged." Industrial executives are advised to employ competent architects or construction engineers to study their industrial needs and develop satisfactory building plans that will comprehend the essential factors enumerated above. Stress is laid on the important fact that **contents** rather than **structure** constitute the major fire hazard. It is asserted that contents have an average value for all uses of three times that of the building; that no building is proof against damage or destruction by fire so long as its contents are inflammable; that 75 percent of the fire loss is due to damages resulting from entinguishing fire rather than from actual combustion damages. The position is taken, therefore that the type of construction selected must be sufficiently low in cost to permit the installation of equipment which will provide complete and immediate fire control through the use of automotic sprinkler protection, automatic fire alarms, automatic shutters, fire-tight floors and dependable watchman service.

The bookklet states that two important problems confront an industrial executive immediately after he has arrived at a decision to erect a new building. These two problems are:

First: What type of building should be used to produce the lowest possible fixed overhead charge for insurance, taxes, interest on capital invested, depreciation.

Second: How to avoid in a structure that which meets the demands of the first proposition, the interruptions to business usually consequent to a fire.

A third consideration that the executive must confront is the time element. Final decision to erect a new building if often deferred until the last possible moment and a delay of several months before the new building is ready for occupancy must mean a heavy financial loss. What is true of a new plant is even more applicable to an expansion of an existing plant. Every unfilled contract, every failure to deliver, slows up and hampers to some degree the wheels that are turning everywhere else. It is pointed out that in mill or heavy timber construction that there are no distressing construction delays. Construction work may progress from floor to floor as rapidly as materials can be put in place at any season of the year. Speed of erection is limited only by human capacity. No allowance need be made for aging of materials.

Again, lack of flexibility in construction has sometimes proved to be a serious drawback in developing an industrial enterprise. For this reason an initial expense for the sake of permanence only is likely to prove anything but economical. There is little salvage in wrecking a portion of a permanent structure when the wrecking itself entails almost as much expense as new construction.

NOTE TIMBER COLUMNS REMAIN INTACT THUS MAINTAINING STRUCTURAL INTEGRITY OF FRAME OF THE BUILDING

SAGGING OF CONCRETE FLOORS

Heavy timber construction has recently attained a very high state of development, although throughout most of American industrial history it has been a favorite type. It was observed years ago that larger timber members used in buildings had withstood the attack of flames much better than unprotected steel or cast iron. These timber members might be charred and even somewhat deeply burned but were often found to be intact and sustaining loads after other materials had failed. This frequently led to the replacement of steel or cast iron members with timber of sufficient size.

The next step was to erect new buildings using heavy timbers and heavy planking throughout. It was found that while such buildings withstood fire remarkably well they were unable to withstand a fire attack supported by large quantities of combustible contents, and, indeed, with the building materials at present available no building can be erected that is capable of withstanding a sustained attack by fire of its contents without suffering severe rupture, if not destruction.

However, the heavy timber type was gradually improved by the introduction of economical methods of cutting off free fire communication from floor to floor and reducing the continuously open areas of all floors to the minimum consonant with convenience and economic operation. With these improvements in design came remarkable improvements in fire control and extinction, with the result that modern mill construction is now generally recognized to be an economical and fire-safe construction, well adapted to meet most industrial requirements.

A prominent fire protection engineer recently compared various types of factory buildings and concluded that possible dry rot in some timber was the single disadvantage in heavy timber construction as against these nine advantages:

1. Difficulty of rendering floors water tight.
2. Difficulty in attaching and changing shaft hangers and machinery.
3. Excess width of wall piers reducing available light.
4. Excess cost.
5. Difficulty of erection during inclement weather.
6. Difficulty of securing first-class workmanship in freezing weather.
7. Difficulty of repairing floors.
8. Cold roofs.
9. Difficulty of reconstruction after fire.

Affirmatively, some of the advantages to be accredited to mill construction are set down as follows:

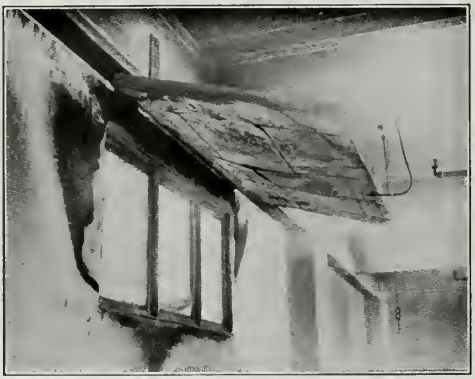
1. It is peculiarly adaptable to changes.
2. It offers more convenient surfaces for the attachment of machinery, shafting and pulleys.
3. It encourages improvements in operation because it does not require expenditures for changes which exceed in value the expected benefits.
4. Automatic sprinkler equipment is easily adjusted and economically maintained.
5. The floors have a resiliency that makes faster machine operation possible without the damaging effect of impacts ruining the machines.
6. Overloaded floors are easily discernible, and the load may be redistributed before rupture takes place allowing structural members to spring back to normal position. Other types of construction produce permanent distortion.

It is maintained that in no other approved type of construction can these requisites of economical plant operation be successfully duplicated or even closely approached.

In discussing fire protection it is remarked that no one is particularly interested in the fire resistance of an unoccupied building. It is contents, not buildings, which make up the bulk of the property loss, and it is contents, in most instances, which cause buildings to burn. "Fire-

proof" is but a relative term. Incombustible materials have no effect whatever on the burning of combustible contents. It is well known that so-called fire-proof buildings are often effectually wrecked by the burning of their contents. The important thing in protection against fire is the exclusion of fires originating outside the building and the extinguishment of any fire the moment it starts on the inside of the building. There are two phases of fire control: the "active" phase which consists of extinguishing a fire; and the "inert" phase which lies in the construction of the building.

Active fire control requires detection and extinction and is either manual or automatic Automatic control is superior, and automatic sprinklers have completely revolutionized the science of fire control. They usually quench fires long before they would be ordinarily discovered.



NOTE COLLAPSED WIRE GLASS AND EFFECTS OF HEAT ON THE SHUTTER

Inert fire control, resulting from inherent quantities of material used in construction, extends no protection to the contents from fire originating in them and must be supplemented by active control. In this connection, it is remarked that the enormous annual fire loss is not constituted wholly of things that burn or that have been consumed by fire; 25 per cent of the fire losses are caused by the fire itself; while the remaining 75 percent represents damage in extinguishing or controlling fires such as damage from great quantities of water, which may be largely overcome in heavy timber mill construction through the use of saturated felt in the floors. But sprinkling systems by applying water where and when it is needed, frequently obviate resort to destructive general flooding.

In regard to fire-tight floors, the author of the booklet takes the position that it is essential that in all industrial buildings and in all

mercantile buildings, of whatever type of construction, stairs, elevators, and beltways, shall be placed in fireproof enclosures with openings to each floor protected by fire-doors or shutters. "There should be no concession. Each floor should be absolutely cut off from every other floor and each section from every other section, so that fire may not communicate."

The conclusion reached about fire-safe industrial buildings is: "Heavy timber 'mill' construction produces a maximum degree of safety at the utmost economy in construction. While in experimental stages it gained a record of serviceabilty and economy.

"In its present state of development it furnishes a type of construction that the Industrial Executive may choose either for a new plant or for plant expansion with the assurance that the wisdom of his choice will be confirmed from every standpoint year after year."

INTERIOR OF A STOREHOUSE AFTER FIRE. NOTE CONDITION OF THE CONTENTS AND THE SPRINKLER HEAD THAT WAS NOT FUSED INDICATING LOW TEMPERATURE AT ALL TIMES.

Enameled Entry Halls

Whether the home be modest or pretentious, the use of enamels in finishing will materially enhance the general decorative effect. Forming either the background or the principal scheme, the delicate charm of an enamel finish has a direct appeal.

The color harmony achieved through the sheen of a snow white or ivory enameled surface against the soft glow of dark woodwork in hallways, living-rooms and other parts of the house, reflects an atmosphere that can be attained with no other finish.

Kitchen and bath enameled in either porcelain-like white or warm gray, present a non-absorbent, sanitary, easily cleaned surface, the fresh beauty of which is most appealing. Dust and dirt do not readily adhere to an enameled surface, and the finish is quickly renewed by wiping with a damp cloth.

BEFORE CALAVERAS RESERVOIR EXISTED. THE HUGE SPRING VALLEY DAM NOW SPANS THIS OUTLET OF BEAUTIFUL CALAVERAS VALLEY

VIEW OF CALAVERAS DAM-SITE LOOKING EAST, BEFORE ANY FILL WAS PLACED

SPILLWAY OF CALAVERAS DAM, SEPTEMBER, 1924. THE TOP OF THE DAM IS SEEN ON THE SKYLINE

Spring Valley's Calaveras Reservoir

By GEORGE A. ELLIOTT, Chief Engineer,
Spring Valley Water Company

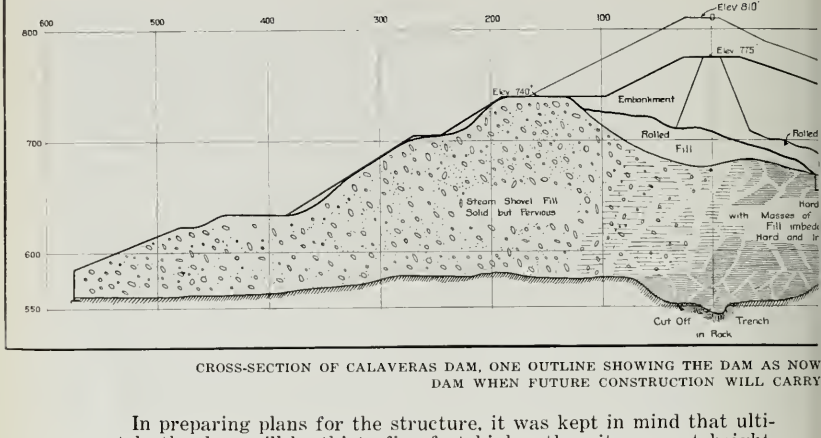
ALL of the construction work necessary for the development of an additional twenty-four million gallons of water daily, commenced in 1921 by Spring Valley Water Company in compliance with the order of the California Railroad Commission and the agreement with the City of San Francisco, is now practically completed.

The Water Company's part in the development consisted of the construction of the Calaveras Dam to a height sufficent to supply the necessary amount of water, the building of an aqueduct from Sunol to Niles, a regulating reservoir at Niles, and a pipe-line from Niles to Irvington to connect with the Bay Division pipe of the Hetch Hetchy line now under construction by the city between Irvington and Crystal Springs reservoir.

The completion of the dam marks the termination of an era in the history of the project which extends over a period of more than fifty years.

It was in 1875 that Calaveras reservoir was first suggested as a source of supply for San Francisco. At that time it was advocated by an engineer named Scowden, who had been employed by the city of San Francisco to investigate and report on the best source of water supply for the city. Considerable opposition developed and the project was dropped. Thereafter the company began the acquisition of the reservoir lands.

As it stands today, the dam is 215 feet high above bed-rock at the center, and contains 2,700,000 cubic yards of fill. It will store 32,780 million gallons. In other words, it has more storage capacity than all of the Peninsula reservoirs. When the reservoir is full the area of the water surface is over 1400 acres.



CROSS-SECTION OF CALAVERAS DAM, ONE OUTLINE SHOWING THE DAM AS NOW
DAM WHEN FUTURE CONSTRUCTION WILL CARRY

In preparing plans for the structure, it was kept in mind that ultimately the dam will be thirty-five feet higher than its present height, and provision was made for this additional height by leaving two benches or berms, about thirty-five feet lower than the existing crest.

To raise the dam to its ultimate height of 250 feet it will be necessary to commence work at some time when the water surface of the lake is lower than the benches and from this point continue the structure by the deposition of materal in the same way that has been followed in the present construction. It will require about 300,000 cubic yards of material to do this work.

Simultaneously, a tunnel about 10,000 feet long will be driven through the ridge which separates Calaveras reservoir from Upper Alameda Creek, and the waters of this creek will be diverted into the reservoir. When this is done, the reservoir capacity will be in the neighborhood of 50,000 million gallons and its daily productivity about fifty million gallons.

The type of construction adopted was a rolled clay core supported on both sides by loosely placed rocky material. The work of placing this material in the dam was done by Palmer & McBryde, contractors.

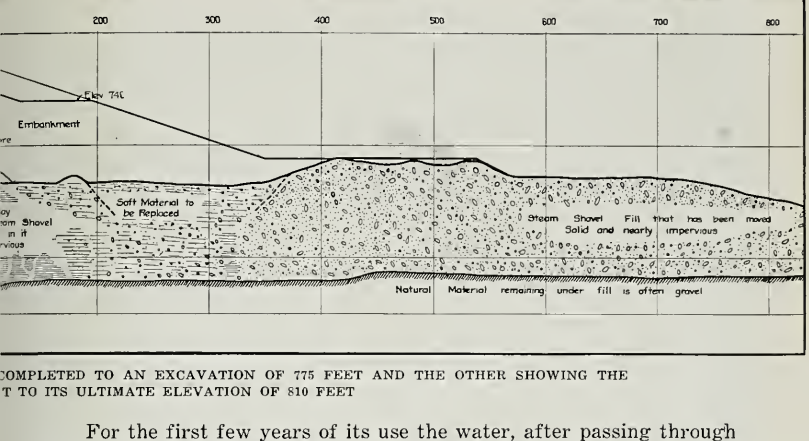
All other work in connection with the construction of the dam was handled directly by the company forces in charge of T. W. Espy, Construction Engineer, who also supervised the work of the contractors.

The spillway, which will carry the surplus waters safely past the dam when the reservoir is full, is 1450 feet long and will carry 20,000 cubic feet of water per second. It involved the excavation of about 200,000 cubic yards and is lined with 6000 cubic yards of reinforced concrete.

The outlet work consists of a concrete-lined shaft surmounted by a tower, from which a tunnel leads to the creek channel below the dam. Water is admitted into the outlet tower from the reservoir at five different elevations, all of which are controlled by gates.

The early rains of the present season have already been effective in starting stream-flow into the reservoir.

The gates have been closed and everything is in readiness to utilize the full storage capacity up to the spillway.



COMPLETED TO AN EXCAVATION OF 775 FEET AND THE OTHER SHOWING THE
T TO ITS ULTIMATE ELEVATION OF 810 FEET

For the first few years of its use the water, after passing through the outlet of the dam, will flow down Alameda Creek to Sunol, where it will be diverted through the subterranean infiltration galleries into the Sunol-Niles aqueduct.

This aqueduct, as it stands today, was part of the construction necessary for the transmission of the additonal water developed by the building of Calaveras dam. Formerly the aqueduct, which is five miles long, consisted in equal parts of concrete-lined tunnels large enough to carry seventy million gallons of water daily and a wood flume which could transport about thirty million gallons of water per day. During the summer of 1923 the wood flume was replaced with a concrete conduit with a capacity of seventy million gallons daily, so that at present the entire transmission system as far as Niles will carry not only the forty-five million gallons demanded under the terms of the arrangement with the city, but also twenty-five million gallons daily in addition, thereby providing space for future development of the Alameda sources.

At the terminus of the aqueduct near Niles a concrete-lined reservoir has just been completed. This reservoir is of the "cut-and-fill" type, the excavated earth being used to form the banks of the basin upon which the concrete lining is laid. It has a capacity of five million gallons, with space for the construction of a duplicate unit at one end. The purpose of the reservoir is to balance the flow between the aqueduct and the pipe-line which commences at this point. Should the aqueduct carry more water than is required to fill the pipe, the surplus goes into storage in the reservoir, and if the reverse is true, the reservoir supplies the deficiency. The Niles reservoir was finished some time ago and is now in operation.

From Niles reservoir to Irvington a forty-four-inch riveted pipe-line about 16,000 feet long was laid parallel to the Western Pacific railroad.

This pipe-line connects with the pipe which is now being constructed by the city of San Francisco. It was built under a contract by the West-

CALAVERAS DAM CARRIED TO A HEIGHT OF 215 FEET ABOVE ITS FOUNDATION, SHOWING BERM CONSTRUCTION OF THE DOWN-STREAM SLOPE

ROLLED CLAY CORE OF CALAVERAS DAM UNDER CONSTRUCTION. THIS CORE IS SUPPORTED BY THE EMBANKMENTS OF ROCKY MATERIAL

ern Pipe and Steel Company of California, the same firm that constructed the Bay Division pipe of the Hetch Hetchy aqueduct between Irvington and Crystal Springs reservoir.

As soon as the construction now under way by the city is completed, the additional water developed by Calaveras reservoir will be used in San Francisco.

The agreement between the company and the city specified that at least twenty-four million gallons daily should be developed. However, for economic reasons, all of the structures have been built to carry more than this amount of water.

SPRING VALLEY'S SUNOL AQUEDUCT, WITH A CAPACITY OF SEVENTY MILLION GALLONS DAILY, WILL CARRY CALAVERAS WATER DOWN NILES CANYON

The construction of Calaveras reservoir, together with improvements made during the last year in the Livermore Valley, which increased the productivity of the subterranean sources owned by the company in Livermore Valley to about double their former capacity, has made it possible to insure at least thirty-two million gallons daily in addition to the twenty-one million gallons daily which has heretofore been obtained from the Alameda sources.

This means that the present developed supply of Spring Valley Water Company is seventy-four millions gallons, sufficient to take care of a population of over 700,000 people.

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Architect and Engineer
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Founded 1905 by E. M. C. Whitney
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Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer, Inc.
PUBLICATION OFFICE:
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828
The publishers disclaim any responsibility for statements made in the advertisements of this magazine.
Terms of Subscription
(Including postage) to all parts of the United States, $2.50 per annum; to Canada 75c additional; to all Foreign points $1 additional
Vol. 80 MARCH, 1925 No. 3

BUILDINGS are erected to serve some especial purpose; if they do that perfectly then are they successful, but if beautiful too, that indeed is architecture.

APPRECIATION OF HOTEL ARCHITECTS

Volumes have been written and much has been said of the influence of personal service, which it is admitted by the writer has always been the greatest factor in hotel operating, but he also contends that notwithstanding the personal equation of the hotel keeper and his staff, that in the earnest competition of today proper architectural features and pleasing equipment are to a very great degree necessary adjuncts.

The architect of the modern hotel structure has proven the boon to hotel men toward the realization of their ideals, for in the last few years, comparatively speaking, a new era has dawned in the hotel business, and the successful man today is the one who, instead of handing out the old style line of empty verbiage, must surround his best thought and endeavor by all the material factors possible, in order to "deliver the goods."

The great American public is constantly demanding more and better service, and the term "service" is far-reaching in its application, and necessitates a linking of the last word in mechanical and practical arrangement with such an aesthetic intwining as to render an effect of gentility, and so the hotel architect must be able to combine his artistic conceptions with those of practical benefit. The management of today is not hampered by the creation of an atmosphere other than that of proportioned and well arranged buildings, devoid of fussy, ornate decorations and stuffy furnishings.

* * *

Even the exterior of the building is of great importance in "selling" the hotel to prospective guests, and the architect of today has so wonderfully realized this point, that he carefully considers every detail of appearance as well as of convenience, making the type of building one that harmonizes with the suroundings, adapting the the highest types of old-world architecture to correspond with modern American ideas, and at the same time considering local climatic conditions, so arranging the building as to afford a maximum of comfort to the guests, and providing roof gardens and loggias where they may feast their eyes on the beauties of the surrounding country, while enjoying the comfort of the refreshing breezes, or if located in a metropolis that the outlook will react favorably upon the guest's impressions of the city, and reflect credit upon the judgment of those whose in-

vestment has made the hotel an accomplished fact.

Realizing, too, the importance of first impressions, the modern architect has given psychological thought to the hotel entrance, planning every detail with the idea in mind of providing an entrance that shall be at once dignified and interesting, and that shall typify the whole-hearted hospitality that is the endeavor of the management to extend.

Where, as in so many instances, shops and stores are necessary to create revenue to justify the investment, these are so placed as to be convenient for the guests as well as for shoppers, and are of a character that will attract a class of trade consistent with the registration.

* * *

While the exterior of the hotel building is an aid in attracting the transient guest, it is of course the interior that converts him into a permanent friend, and here there are many points for the architect to consider. The appearance must be attractive, the decorations artistic, being both aesthetic and comfortable, the lighting such as to throw a homelike glow over the surroundings and yet amply sufficient for every manner of use.

Even provision is made for the proper location of a pipe organ that greets incoming guests. Installing the first pipe organ in a business man's hotel in California was my privilege, as it occurred to me that the notes from the organ would have their effect in confirming the hospitable endeavor of the management.

The arrangement of the lobbies and the blending of color schemes, lending an appropriate atmosphere, are problems worked out by the architect with meticulous care, and are not the result of any hit-or-miss methods, but are produced by trained appreciation of salient features of each element. While there is a general period scheme, the architect does not hesitate to subordinate this scheme to the demands of comfort and sanitation, and also keeps the character of materials and furnishings within the limits of economical operation.

One of the great problems met by the hotel architect is that of arranging the rooms in such a way as to give the greatest possible usable space without unduly limiting the number of rooms to a given area. Rooms en suite must be so arranged as to be conviently accessible, closets and bath rooms must be ample, and the office and culinary departments as well as the laundry and heating and power arrangements must be so placed and arranged as to enable each employee to devote his whole energy to the work in hand, instead of dissipating it in overcoming inconvenient or uncomfortable conditions.

As the modern hotel is, in many instances, a center of social life for the community, the architect has provided dignified and attractive rooms to be used as meeting places for committees, clubs, private parties, etc., to supplement the resources of the public banquet room and foyer.

All these features have now become a realized ideal with hotel men, since hotel buildings have become a harmonious whole, and are meeting the refined tastes of civic and sanitary conscience.

—H. WINGATE LAKE,
President Californian Hotel, Fresno.

THE ARCHITECT AND BUILDER

This subject was exceptionally well discussed at a recent conference by Mr. Charles E. Fox of Chicago, President Illinois Society of Architects. Admitting that the relationship existing between the Architect and the Builder is not 100 per cent satisfactory, he pointed out that the one big factor leading to more, better and cheaper

construction, is the problem of the architects and the contractors.

He emphasized that sympathy is the underlying proposition behind the entire building situation. Fairness makes for a better relationship. When the architect and the builder each are 100 per cent fair, it makes for harmony for the solutions of most problems and always for the most excellent results.

Another important question touched upon by Mr. Fox, was efficiency. If the architect is efficient and follows the correct way of doing things; uses the correct materials; calls for the proper method of construction or installation and avoids methods nobody knows anything about; if he works in line of the accepted technique of the art of interpretation, he will tremendously facilitate the work of the contractors.

If the contractor brings a good organizing sense to the operation; organizes his materials and supplies; his sub-contractors, his equipment and method of supply; if his organization is composed of men who know the job and know their job, and if all of them, studying their problems and profiting by their experiences; if they study what is to be done and find their errors in advance and iron them out, then, all things will make for harmonious operation and a fine result must surely be accomplished. Above all, says Mr. Fox, let there be a realization of the purposes of those efforts, and a sympathetic understanding between all the parties, and efficiency will cease to be a problem.

THE architect must be the most progressive man in the building field and at the same time the most cautiously conservative. He must have no entangling alliances which might bias his judgment.
CARL F. GOULD, A. I. A.
Seattle, Wash.

THE SMALL HOUSE PROBLEM

As to the small house problem much thought has been given and a considerable amount of investigation has been carried on. It goes without saying that the design of the small house has a direct bearing on the architectural standards of any community and indirectly affects the design of every building of more importance. For this reason, alone, architects collectively should work out some successful solution to this problem, a plan by which the prospective small house owner can secure for a moderate price a set of accurate plans and specifications, plans in which the design is of a high architectural standard. We as architects realize the great economic benefit alone this would be to the public.

At present small house plans and specifications are so cheaply and carelessly drawn up by small contractors and plan factories that the owner has no protection in a contract of which they are a part.

The public, generally speaking, simply does not know what architecture is—they do not realize that first of all good architecture means sane and economical construction, expressed in a design which is suitable and logical for the purpose for which the building is erected.

We, as architects, know that no building is better than its architect and contractors. We, as architects, knkow that the services of a competent architect and contractor are more than worth while. We see on all sides of us literally millions of dollars being misused and wasted in building construction by owners who believe that the competent architect and competent contractor are not worth while and are tempted by low bids in exactly the same way and with the same proportion of risk as the ignorant investor is tempted by a wild cat investment which promises to yield fabulous returns. We, as architects, know all this to be true.

REGINALD JOHNSON,
Retiring President,
Southern California Chapter, A. I. A.

With the Architects

Building Reports and Personal Mention

Architects Granted Certificates

Certificates to practice architecture in the state of California were granted on February 3d, 1925, to the following:

Charles C. Frye, 416 I. W. Hellman building, Los Angeles.

David Olson, 1800 Telegraph avenue, Oakland.

Russell Guerne de Lappe, 2715 9th avenue, Oakland.

Walter E. Baumberger, 1332 Geary street, San Francisco.

Paul L. Dragon, 369 Pine street, San Francisco.

At a meeting of the State Board, Northern District, February 24th, the following were granted certificates to practice architecture:

Anton Buyko, First National Bank building, San Francisco.

Ray F. Keefer, 375 Newton avenue, Oakland.

Wilbur D. Peugh, 1701 Oxford street, Berkeley.

Douglas D. Stone, Foxcroft building, San Francisco.

The following have been granted certificates by the State Board of Architecture, Southern District:

Henry Wm. Greene, 509½ S. Western avenue, Los Angeles.

George A. Nagle, 2205 W. Sixth street, Los Angeles.

F. Chapman Clemeshaw, Ocean Beach, San Diego.

Ralph S. Loring, 530 S. Euclid, Pasadena, and Henry P. Sabin, 1136 Citizens National Bank, Los Angeles.

Two Large Commercial Garages

Plans are being prepared by Architects Powers & Ahnden, 460 Montgomery street, San Francisco, for a six-story reinforced concrete commercial garage to be erected on the site of the old San Francisco Stock Exchange, Bush street, between Kearny and Montgomery streets. A garage of similar size will also be erected near the Riverside Apartments on Turk street, for Mr. Bell, an attorney, from plans by Architect E. H. Denke. Plans have also been completed by Powers & Ahnden for a two-story and basement concrete garage on Fourth street for Mr. L. C. Ritzan. The estimated cost is $85,000.

Contract for Arcata School

Architect Norman R. Coulter, 46 Kearny street, San Francisco, has awarded a contract for $62,420 for a new grammar school at Arcata, Humboldt county.

Designing Many Theatres

Architect Mark T. Jorgensen, 110 Sutter street, San Francisco, has the following new theatre work in his office:

Class A steel frame and concrete moving picture theatre, Irving street, San Francisco. Cost $130,000.

Class A moving picture and vaudeville theatre, Stanford street and San Pablo avenue, Berkeley. Cost $75,000.

Class A theatre and store building, Foothill boulevard, Oakland. Cost $125,000.

Reinforced concrete moving picture theatre, Pacific Grove. Cost $100,000.

Mr. Jorgensen has also made plans for a $20,000 apartment house at Richland avenue and Mission street, San Francisco, and for a one-story reinforced concrete store building on Irving street, between 14th and 15th avenues, San Francisco.

Want Registration Law

Architects of Iowa will go before this session of the legislature and ask for the enactment of a state registration law. The bill provides for the creation of a board of architectural examiners, to be appointed by the governor. Five board members are suggested.

The bill provides that any qualified person who shall have been exclusively engaged in the practice of architecture in the state at the time this act, if passed, becomes effective, may within ninety days after approval of the act apply for and be granted a certification of registration without examination by payment to the board of the fee for certificate registration.

Twenty-six states have a similar law.

Architects and Engineers Club

The Architects and Engineers Club of Sacramento has been formed with the following officers: R. A. Herold, President; C. H. Kromer, Vice-President; A. H. Memmler, Secretary; H. W. De Haven, Treasurer; Jas. S. Dean, Jens C. Peterson and Tom Poage, Directors. The club meets the first Monday in the month at 910 9th street, Sacramento. A competition for a club letterhead and bookmark will be held in April.

Textile Building

Architect W. Douglas Lee, Sun building, Los Angeles, is preparing plans for a twelve-story reinforced concrete textile building at Eighth and Maple streets, Los Angeles, for Lloyd & Casler.

Noted Architect Dies

Mr. S. Breack Parkman Trowbridge, senior member of the firm of Trowbridge & Livingston, an artist and architect of international renown and patron of art and art appreciation, died on January 29 at his home in New York City, aged 62 years. Mr. Trowbridge was graduated from Trinity College and the School of Architecture of Columbia University. He also studied at L'Ecole des Beaux Arts. He designed many of the banking buildings of New York City, including the Stock Exchange, the Morgan Bank, the Equitable Trust building, the Mellon National Bank of Pittsburgh, and the Mitsui Bank of Tokio. He was an incorporator, vice-president and trustee of the American Academy in Rome, a Fellow of the American Institute of Architects and a member of the National Institute of Arts and Letters, the National Academy of Design and the Archiectural League of New York and the Society of Beaux Arts Architects.

Passing of Charles Sidney Haire

Mr. Charles Sidney Haire, aged 67, prominent Montana architect, and member of the firm of Link & Haire of Helena, died recently in Olympia, Washington, while en route to Helena from Oakland, California. He was in Olympia to confer with a construction firm concerning the erection of the capitol building in that city.

Mr. Haire designed many of the finest buildings in Montana, including the wings of the capitol building at Helena, the Algeria Shrine temple, Scottish Rite temple and the new Montana Life building at Helena, and a number of the new buildings of the State University at Missoula. He was the architect for the county high school building at Miles City.

Death of Hubert Quinn

The death of Mr. Hubert Quinn, president and manager of the Hubert Quinn Planing Mill, Los Angeles, occured in Los Angeles, February 7. Mr. Quinn had many friends in San Francisco and Oakland where he resided for a number of years before going to Los Angeles. He was for some time manager of the Oakland office and later in charge of the Los Angeles office of the Pacific Manufacturing Company.

Furniture Warehouse

Architect S. Heiman, 57 Post street, San Francisco, has completed plans for a six-story Class C brick furniture warehouse for Lachman Bros. to be built on Sixteenth street, San Francisco. Mr. Heiman has also prepared plans for extensive alterations to the six-story Moore-Watson building on Front street, near Market, San Francisco, for the Dunn-Williams Company.

Bridging the Golden Gate

Mr. Joseph B. Strauss, noted bridge engineer of Chicago, and designer of the proposed bridge to span the Golden Gate entrance to San Francisco bay, told the members of the California legislature, at its preliminary session, that while a bridge with a span of 4000 ft., such as the one proposed for San Francisco would have, has never been built, it presents no unusual difficulties. He said the proposal to make the single span so long was not from any intention to construct a freak bridge, but because the depth of the water at the Golden Gate necessitated it. At both ends the bridge would be anchored to piers built upon solid rock that is only 50 feet below the surface of the water.

The structure would take advantage of both cantilever and suspension principles and would be a combination of the two. Huge towers at each end, rising 650 feet in height, would serve as the anchoring points for the huge main cable, 30 inches in diameter, from which the bridge would be suspended.

Mr. Strauss said the total length of the bridge and approaches would be 6170 feet, or approximately a mile and one-fifth. The height of the main bridge floor would rise 200 feet above the surface of the water, while the depth of the bridge substructure would be 50 feet beneath the surface. It will require five years for preliminary and actual construction work.

He said his estimate of the total cost of construction was $21,000,000.

Designs Japanese Schools

Architect Joshua H. Vogel of Seattle, who has been in the Orient the past four years, has moved from Shanghai, China, to Nagasaki, Japan, where he will be occupied for about a year in the construction of two large school buildings which he has designed. On the completion of this work he expects to return to this country for a year's vacation. Mr. Vogel reports that his professional work during his sojourn in the Orient has included over $3,000,000 worth of buildings for several religious denominations.

Award For Best Building

The Seattle Fine Arts Society is to make an award for the best building built in Seattle during the year 1924. To assist in the preliminary work of the jury, the owner or architect of any such building is requested to send photograph or photographs to the Seattle Fine Arts Society, 2028 Third avenue, Seattle. Further information in regard to the work of the jury as soon as determined, may be obtained from Miss Katherine Calhoun, executive secretary.

Personal

Architects Roland Sauter and E. Keith Lockard of Santa Barbara have opened branch offices in the Chrisman building, Ventura. This firm has quite a little commercial work in prospect in Ventura.

Architect John Galen Howard is enjoying a trip abroad.

Mr. George Wagner, San Francisco construction engineer, and Mrs. Wagner, left on March 15th for a year's trip abroad.

Major W. H. Radcliffe, in charge of construction of the U. S. Veterans' Hospital project at Livermore, has been transferred to San Fernando to supervise construction of the new hospital to be erected by the Veterans' Bureau in that city.

Architcet Edwin J. Ivey of Seattle, and Mrs. Ivey, recently left for Europe to remain the greater portion of the year in quest of architectural ideas and inspiration.

Mr. Donald B. Parkinson, Los Angeles, associated with his father, Mr. John Parkinson, in the practice of architecture, left the early part of February on a three-months' tour of Europe to continue his study of architecture in France and Italy. He will return to New York in time to attend the annual convention of the American Institute of Architects as delegate from Southern California Chapter.

Mr. W. S. Farley, associate member of the American Society of Civil Engineers, anounces the opening of an office at 1131 Merchants National Bank building, Los Angeles.

Architect Herbert A. Blogg has moved from 509 Thompson building to 205 Northern Life building, Seattle, Wash., where he will be associated with Carl Siebrand, architect. Mr. Blogg has practiced in Seattle about two and one-half years.

Architect F. Manson White, of Portland, has moved his office and practice to Eugene. Mr. Manson designed the two new Eugene junior high school buildings, and the $170,000 apartment house to be erected by Messrs. H. R. Taylor and W. C. Elliot there.

Graduates of Cornell University's college of landscapes architecture and with a successful record at Ithaca, N. Y., Messrs. I. B. Solberg and L. H. Anderson have established Pacific Northwest offices at Seattle. They are at 6111 Arcade building.

Mr. Robert M. Morton, California State Highway Engineer, has been selected by the American Association of State Highway officials to serve on a special committee which will undertake classifying and numbering all interstate highways in America.

Library Wishes Back Numbers

The New York Public Library is anxious to have a complete file of The Architect and Engineer, since the initial issue 23 years ago. The Librarian has asked that mention of this fact be made in our reading pages, together with a request that donations from subscribers who may have no further use for their copies will be greatly appreciated. The following is a statement of the issues needed and any of these may be sent direct to Mr. E. H. Anderson, Director, New York Public Library, 476 Fifth avenue, New York:

Vols. 1 to 6, all issues (previous to 1907).
Vol. 7, Nos. 1 and 2.
Vols. 8 to 13, all issues.
Vol. 14, Nos. 1 and 3.
Vol. 15, No. 1.
Vol. 17, No. 1 and 2.
Vol. 18, No. 3.
Vol. 19, Nos. 1 and 2.
Vol. 20, Nos. 1 and 2.
Vol. 21, all issues.
Vol. 22, No. 2.
Vol. 72, No. 1.

Architects Baumann and Jose Busy

New work in the office of Architects Baumann & Jose, 251 Kearny street, San Francisco, includes the following:

Six-story brick apartment house, Pine and Stockton streets, $150,000.

Six-story Class A apartment house, Sacramento and Octavia streets, $150,000.

Three-story frame apartment house, Octavia street, near California, $30,000.

Three-story frame and stucco apartment house, Second avenue and Clement street, $40,000.

Three-story frame and plaster apartment house, Schrader street, north of Fell, $35,000.

Two-story store and office building, Capitol and Ocean avenues, $15,000.

Berkeley Office Building

A twelve-story Class A store and office building will be constructed at once at Shattuck avenue and Center street, Berkeley, by the Mercantile Bank & Trust Company. Plans are being prepared by Architect W. H. Ratcliff, Jr., who is also preparing plans for a $70,000 branch bank building for the same institution on College avenue (Elmwood District).

Architect on Duty Again

Architect August G. Headman has returned to his office in the Call Building, San Francisco, after an absence of more than two months due to illness.

Safer Building Restrictions

With the death of seven as the result of an apartment-house fire in Chicago, on January 31st, people have at last been awakened to the antiquated ordinance of the Chicago Building Code which permits the habitation of firetrap buildings, and an appeal is being made to the City Council to compel every apartment house to be so protected that similar tragedies will be practically impossible in the future.

The Coroner's Jury which investigated the death of these seven people is heading this appeal by incorporating in their report a recommendation to the City Council that in every apartment building three or more stories high, where the stairways are now plastered with ordinary lath these stairs be protected on all sides by metal lath and plaster. This type of construction was recently given a one-hour rating by the National Board of Underwriters. Had the stairs in the burned building been so protected, there would have been ample time for all the occupants to have gotten out safely. Death was caused to two people who, finding the stairs on fire and their means of escape cut off, jumped from the upper windows.

Twelve-Story Apartments

Architect Frederick W. Quandt and Engineer George A. Bos have completed plans for a twelve-story Class A community apartment house to be built on Pacific avenue, between Laguna and Buchanan streets, San Francisco. They have also made drawings for a six-story community apartment house to be erected on the northeast corner of 15th and N streets, Sacramento, for Mr. Edwin J. Bidell.

Le Brun Scholarship

Forty-six architects will compete for the Le Brun traveling scholarship, given by the New York chapter of the American Institute of Architects. The subject for this year's competition is a municipal building for a town of 150,000 population. Mr. Lewis H. Pries of San Francisco won the 1922 award with a design for public baths.

Nurses' Home

Architect Julia Morgan has been commissioned to prepare plans for a nurses' home on Pine street, San Francisco. The project which will involve an expenditure of $200,000 or more, has been satisfactorily financed.

Oakland Store Building

Architect C. W. McCall has completed plans for a two-story and basement frame and stucco store building to be erected at 40th and Broadway, Oakland, for Mr. C. K. Brower. There will be one large store and twelve offices.

Architects Build Homes

President Daniel Huntington of the Washington State Chapter, A. I. A., has built and is now occupying his new residence in the Montlake District, Seattle. Architect Arthur Loveless, not content with building for himself a fine residence, has allowed his enthusiasm to continue to the extent of building for himself an office building in the Broadway section of Seattle.

Hotel Additions

Two San Francisco hotels have announced plans for additional units. The Hotel Whitcomb will build a $250,000 addition, providing one hundred more guest rooms, a coffee shop and extension to the hotel garage. The Ambassador Hotel at Eddy and Mason streets, will also add two hundred rooms, according to the new owner, Mr. M. A. Samuels.

Designing Two Theatres

Architects Bliss & Faville, Balboa building, San Francisco, are preparing plans for two moving picture theatres for the National Theatres Syndicate, 988 Market street, San Francisco. One will be erected in Marysville and the other in Chico, each to cost $250,000.

Piedmont Residence

Architects Meyer & Johnson, of San Francisco, have completed plans for a large residence for Mr. H. G. Hengen to be built at Capitan street and Richardson way, Piedmont. The house will be of the English type and will cost in the neighborhood of $30,000.

Concrete Italian Residence

The fashionable Montecito District near Santa Barbara is to have another beautiful Italian home from plans by Architect Carleton M. Winslow, Van Nuys building, Los Angeles. The owner, Mr. W. P. Nelson, will spend $150,000 on the improvements.

To Collect Accident Data

Services of the Sacramento Chapter, American Association of Engineers, has been accepted by the Sacramento Chamber of Commerce to collect data regarding traffic and highway accidents to promote safety. The engineers will work in conjunction with the chamber's highway safety committee.

Market and Apartments

Architect W. J. Wilkinson has completed plans for a two-story market and apartment building, which Barrett & Hilp will build at East 17th street and Third avenue, Oakland, for the Turlock Produce Company. The building will cost $90,000.

Rubber Paving Brick a New Departure for Bridge Flooring

THE largest area of rubber street paving thus far laid in America was completed late in October on the famous Michigan Avenue bridge, Chicago, Illinois. Although two other notable bridge installations have been made in this country during the past year, nowhere else has such an extensive trial of this new paving material been made, nor has such an excellent opportunity been afforded to demonstrate its many desirable qualities and advantages. Numerous rigid requirements had to be met in the floor covering of this bridge, because of the character of its construction and the uses to which it was put. That these requirements have been fully met by the use of rubber paving appears certain.

Rubber paving has been laid across one entire span of the bridge, including sidewalk and roadway. This means a strip of rubber sidewalk 150 feet long and 12 feet wide, or 1,800 square feet, and also a strip of rubber roadway 150 feet long and 30 feet wide, or 4,500 square feet, making a total of 6,500 square feet of rubber surface. Being of corrugated rubber, the paving bricks prevent skidding.

Added to this desired characteristic are the wonderful wearing qualities of rubber paving, which have been demonstrated in England, and it is believed that time will demonstrate the superiority of the rubber blocks to the wooden blocks since they are less subject to the expansion and contraction characteristic of wooden blocks.

The rubber paving of the Michigan Avenue bridge was manufactured and laid by the Wright Rubber Products Co., Racine, Wisconsin. This company has done virtually all of the practical pioneering in this line of rubber manufacture that has been attempted in this country, including the rubber surfacing of parts of the Northern Avenue bridge, Boston, Massachusetts, and the Eads bridge across the Mississippi river at St. Louis, Missouri.

The rubber paving bricks employed in Chicago somewhat resemble those laid in Boston and St. Louis and are of typical Wright interlocking design. The bricks are specially corrugated on the roadway, while the sidewalk bricks are also corrugated, but only crosswise. All of the bricks measure 6 by 12 inches and on the sidewalk are ½ inch thick. Those on the roadway are 1 inch thick. The paving is laid on the wood planking of the bridge in a special cement, each brick being further reinforced to the planking with drive screws.

Cheek & Gillis, New Call building, San Francisco, are the California representatives for this company. They have installed Wright rubber flooring in many San Francisco homes, stores, office buildings and hotels. A complete warehouse stock is carried in San Francisco so that immediate delivery and installation may be made.

Builders In Convention

The recent National convention of Builders' Exchanges held in Los Angeles was well attended. The convention voted to hold its 1926 meeting at Oklahoma City, Oklahoma.

Mr. David T. Riffle, past president of the Builders' Exchange of Pittsburgh, Pa., who served as first vice-president during the last year, was elected president to succeed Mr. Wm. F. Chew of Baltimore. Mr. Robert L. Reisinger of Milwaukee, who was unable to attend the convention, was elected first vice-president, and a signal honor was shown to the San Francisco Exchange, one of the youngest members of the association, by the election of Mr. A. W. George, president of that body, as second vice-president. Mr. Max Bauman of New York City was elected treasurer.

Building Material Firm Reorganized

Anouncement is made that Messrs. L. H. Price and F. E. Teltz have purchased the interest of Mr. C. J. Waterhouse in the Waterhouse-Wilcox Co., building material dealers and manufacturer's agents, San Francisco, and the business will hereafter be conducted under the firm name of Price-Teltz Company. Mr. F. C. Price will also be identifed with the concern.

The company will continue to carry as complete a line of building specialities as possible, as well as a line of furnaces and refrigerating machines.

For the benefit of architects and engineers these people are always glad to furnish preliminary estimates on the cost of various specialties which they handle, the more important of which are listed below:

Doors—Steel rolling, counterbalanced elevator, horizontal folding, kalomine, hollow metal, metal covered, etc.
Steel Sash—Casement, double hung, reversible, etc.
Hardware—Elevator door, window pulleys, folding door, garage door.
Partitions—Metal toilet and office folding.
Mail Chutes
Concrete inserts
Scuppers
Safety treads
Brass stair nosing
Ventilators
Joist hangers
Sidewalk lights

Standard Building Form

The standard form for building contracts is now an approved document, action to this end having been taken at a two-day meeting of the Joint Conference on Standard Contracts, held in Washington at the Department of Commerce, February 11 and 12.

When the conference held this meeting, strong protests were offered against elimination of the arbitration clauses so long used in the standard documents of the American Institute of Architects. These protests, lodged by contractors and others, caused the subject of arbritation to be opened up again. The result was that the A. I. A. clauses were drafted into the document as adopted by the conference.

The building document was finally completed and proved acceptable to the representatives of the A. I. A. which has already expressed its intention to issue this document as the fourth edition of its standard documents. Though it is necessary that the form upon which action was taken at the Washington meeting shall yet be formally presented to the Board of Directors of the A. I. A. for final approval, the compatability already shown insures this will simply be the routine action.

Rapid progress is now assured as regards application of the standard document to construction operations. It is expected that within sixty days the form will be in circulation.

The Western Society of Engineers at a meeting held recently in Chicago devoted its attention to consideration of the standard contract forms. The general subject of the standard documents was accorded a very cooperative treatment and strong favor for the engineering form was shown by the special committee appointed to consider the matter through expressions of its chairman.

Secures Splendid Position

Architect Charles Edward Hodges, formerly resident architect at Stanford University, Palo Alto, and later associated with the late W. Garden Mitchell in the practice of architecture in San Francisco, has recently been appointed chief designer and assistant to the architect of the Holland Tunnel and Bridge Commission of New York and New Jersey. Mr. Hodges was one of seventy-five candidates for the position. He writes that he expects to exhibit some of his recent work at the annual exhibition of the Architectural League in New York City this year.

Construction Projects Abroad

Contributed by U. S. Department of Commerce, Washington

Trade Schools in Brazil

The President of the State of Ceara is authorized by the legislature to open credits for constructing and establishing trade schools in the principal cities of the state. American firms handling machine tools, shop equipment, and trade-school supplies may find in this project an opportunity for some sales.

Bridge at Frankfort

The construction of a modern bridge at the city of Frankfort on the Main to replace the "Alte Brucke" seems now assured by the success of a recent lottery promoted by a committee of leading citizens which has netted the sum of 400,000 gold marks.

Pier in Java

The Surabaya Harbor Board has completed plans for the erection of a pier at Kamal, Madura, which will cost about 61,000 guilders (about $24,400), reports Vice Consul Winslow, to the Department of Commerce.

Construction in Vancouver

The Vancouver Harbor Board plans to construct a hospital elevator to treat tough grain, according to report to the Department of Commerce from Consul Tewell, Vancouver. The cost will approximate $100,000.

Department Stores

The three largest department stores in Vancouver will enlarge their establishments, one by building new wings and making other improvements to its present property, another by preparing for the construction of a brick addition to cost about $400,000, and a third concern has plans for a large fireproof extension to the present store building.

Aqueduct Proposed

The enactment of a recent law creating special taxes for the accumulation of funds may assure the construction of an aqueduct for San Domingo City, in accordance with technical plans to be studied and approved by the Department of Public Works, according to report to the Department of Commerce from Consul Hosmer, San Domingo.

COMMUNICATIONS

Credit to All

Editor, The Architect and Engineer,
626 Foxeroft Building, San Francisco, California.

Enclosed please find check for $1.00, for which send us two (2) copies of your publication "Architect and Engineer" for February, 1925.

You may well imagine our delight at seeing this issue so generously devoted to Monterey Peninsula and we assure you it is with great pride we have noticed the artistry in your magazine. Certainly this publication does your concern as much credit as the beautiful homes depicted therein, are a credit to this region.

Sincerely,
MONTEREY CHAMBER OF COMMERCE,
F. P. Foster, Secretary.

St. Francis Wood Dwellings

Architects Masten & Hurd have completed plans for two attractive dwellings in St. Francis Wood, San Francisco. They are for the West Gate Park Company and are to cost approximately $11,000 each.

TRADE NOTES

Mr. Waterhouse Forms Company

Mr. C. J. Waterhouse, formerly president of the Waterhouse-Wilcox Company, has left this firm and announces the organization of the C. J. Waterhouse & Sons Company with offices in the Sharon building, San Francisco. They are representing the following concerns in the Northern California and Nevada territory: Union Fibre Company, the Turner & Seymour Mfg. Company, Van Kannel Revolving Door Company, Union Metal Mfg. Company, Durabilt Steel Locker Company, Lichty Metal Products Company, Hendrick Mfg. Company, E. J. Wirfs Company, Mitchell-Tappen Company, Litterer Bros. Manufacturing Company and the Peelle Company. Freight elevator doors made by the Peelle Company were installed in the Westinghouse Electric and Manufacturing Company, Theme Hosiery Company and American Can Company buildings shown in this issue.

Clean Floors

Mr. A. Streiff, formerly with Mr. K. M. Hayden, distributor of Minwax Products, announces the formation of the Floor Specialty Co., to clean, polish and waterproof floors of all descriptions.

All the floors of the Oakland Bank were treated with Minwax and Mr. Streiff recommends the use of this product on all similar jobs. The company specializes in the polishing and cleaning of marble, terrazzo, magnisite, cork and linoleum floors, and also waterproof interior and exteriors of buildings. All work completed by the Floor Specialty Co., is strictly guaranteed.

Offices are maintained at 136 McAllister street, San Francisco.

Trumbull Announces New Catalog

The Trumbull Electric Mfg. Co., are issuing a new complete catalog, covering their entire line of safety switches, knife switches, wiring devices, panel boards and switch boards.

The catalog is 10″x 8½″ and contains 200 pages of dimensional drawings, illustrations and detailed data of much interest to architects and engineers.

The cover is attractive imitation leather and a copy will be sent to readers of this magazine upon request. Address the San Francisco office, 595 Mission street, and ask for Catalog No. 13, 1925.

Fenestra Production Increases

The sale and erection of Fenestra steel windows on the coast will be supervised in the future by Mr. G. P. Richardson, now in charge of the Detroit Steel Products Company's Pacific Coast territory.

In his new capacity, Mr. Richardson will have charge of the following sales offices: Seattle, Spokane, Portland, Salt Lake City, Stockton, Oakland, San Francisco, San Jose, Fresno, Los Angeles and San Diego.

Production of Fenestra Sash in the Oakland plant of the Detroit Steel Products Company has increased 100% in the last year and a half.

Bowser Service

"Representative Power Plants," is a title given the latest trade booklet published by S. F. Bowser & Co., Inc., a copy of which may be had for the asking. Other booklets and folders descriptive of Bowser's Service include: filling stations, grocery stores, hardware stores, factories of all descriptions, dry cleaning plants, railroads, general commercial establishments, (such as department stores, dairies, coal yards), etc.

"Representative Power Plants," is a descriptive booklet telling something of Bowser Service to power plants.

A Bulletin in Monel Metal

The Pacific Foundry Company, Harrison and Eighteenth streets, San Francisco, has just published a new Bulletin (No. 70), which tells all about monel metal and its chemical properties. The use of this material for certain building equipments is recommended because it is subaervous to corrosion. Monel metal is used in hotel, restaurant and cafeteria equipment, cornices, gutters, ventilators, roofing, ornamental trim for buildings, laundry machinery, etc. A copy of the book will be mailed free upon request.

Steel Men Organize

Nineteen fabricators have organized the Structural Steel Institute of California and appointed Mr. John L. Clymer manager with offices in the Mattson building, San Francisco.

The following comprise the executive committee: Messrs. P. F. Gillespie, Judson Manufacturing Company; Harry Mortenson, Mortenson Construction Company; Howard Morris, Western Iron Works; Charles E. Spencer, California Steel Company; S. S. Herrick, Herrick Iron Works.

Birchfield Boiler Builds Addition

The sales of the Birchfield patented steel heating boiler, which is manufactured by the Birchfield Boiler Company of Tacoma, Washington, is so rapidly increasing that the company has started the erection of an addition to its plant which will be used for storage purposes. This is the third extension to the company's plant in recent years.

China Bathroom Accessories

The Fairfacts Company, manufacturers of china bathroom accessories, 234 - 236 West Fourteenth street, New York, has just completed its 1925 catalogue which has been compiled for the special use of the architectural profession. It is one of the most complete and attractive catalogues ever issued in connection with this particular branch of the building industry. As is well known the American Institute of Architects has a Scientific Research Department which issues a document called the A. I. A. Document No. 172 (being a filing system for architects' offices).

The Fairfacts catalogue is marked for the particular grand division and subdivision allotted to its bathroom fixture products recently by the Scientific Research Department, and may, therefore, be readily filed by architects in this new subdivision.

There is a growing tendency to use colored tiles in the modern bathroom—in itself, a very satisfactory and attractive progression from the all-white bathroom. However, as in all color schemes, much unintelligent use is made of the colors and of the combinations.

This unintelligent use of colors is glaringly evidenced when architects or owners use bathroom accessories colored to match the tiles that are to be used. One can imagine the inappropriateness of a blue soap dish or a green tumbler holder or a yellow tooth brush holder.

In the new catalogue are a number of color pages illustrating bathrooms in color, and indicating beyond any doubt whatever the value of white bathroom accessories, from an artistic standpoint, when used with tiles of various colors. It seems as if the white fixtures by their very contrast, enhance the color values of the tiles.

Manufacturers are strongly of the opinion that the very insistent and laudable demand on the part of the consuming public for strictly sanitary fixtures is met adequately by white fixtures. Only with white fixtures can dirt be readily observed or deterioration of the fixtures be discovered.

Used 36,000 Floor Anchors

The use of modern floor anchors for fastening wood floors to concrete is becoming more generally adopted, especially in Class A buildings. Cheek and Gillis, 74 New Montgomery street, San Francisco, who represent the Munson Manufacturing Company, supplied over 36,000 floor anchors for the new Chronicle building illustrated in this issue.

Opens New Sales and Service Rooms

To better accommodate the expansion of their business in California and adjacent territory, the Kewanee Boiler Company have opened new sales and display rooms in the Rialto building, 635 Mission street, San Francisco, where the public will have the opportunity of personally inspecting Kewanee products.

These commodious quarters will also facilitate the Company's Engineering Service Department which is a paramount feature in Kewanee's sales policy.

Architects, engineers and heating contractors are especially requested to visit this new display and acquaint themselves with the possibility of using this service for the mutual benefit of their clients and themselves.

The new size type K boiler they are announcing will be of special interest to owners and builders of small apartment houses and flats. This new size boiler is designed to supply from 400 to 800 sq. ft. of direct steam radiation, and is a valuable addition to their already complete line of boilers for every purpose.

Nation's Homes Heated by Gas

During the next generation the gas industry will make strides that will compare with, if not surpass, the development of the electricial industry during the present generation, according to Mr. F. W. Steere, well-known engineer of Detroit.

"This statement", explains Mr. Steere, "is made having in mind that the first electric lighting plant was started in New York City in 1882—only forty-three years ago—and that the commercial development of the electric motor was several years later."

Universal heating of houses by gas is a reality of the not distant future, Mr. Steere believes. He says our present methods of house heating can only be compared with and belong to the same age as the tallow dip and the town pump.

"Our grandchildren will look upon a coal stove much as we now think of a spinning wheel," he says. "Gas heating is not an idle dream. Several of the larger gas companies have already started on very extensive construction programs with this gas load as the ultimate consideration."

Mr. Steere believes that the increased cost of heating houses with gas would be more than offset by the actual savings to buildings, paint, furnishings, clothing, etc., entirely aside from the effect on health, the value of by-products recovered, and other indirect savings and advantages.

Roof and Waterproofing Problems

Edited by J. I. HOLDER

The Truth About Gravel Roofs

By J. I. HOLDER, Director of Engineering Department
of The Paraffine Companies, Inc.

This article is based on facts—not theories or suppositions. It is prompted by a sincere desire to clear up in the minds of architects and engineers any possible confusion or erroneous impressions which may exist by reason of "sales arguments" and other propaganda; also to point the way to obtaining the greatest value from materials used in built up roof construction.

DEPARTING from my usual custom I am writing this in the first person. Many of you (the readers of The Architect and Engineer) know that I am sincerely laboring to correct the troubles and improve the conditions that exist in the built-up roofing industry. A vast improvement has been made within the last few years, due in part to those architects and engineers who have been definite and accurate in their specifications, and who have had the courage of their convictions by insisting that these selfsame specifications be carried out to the last detail. I say this without regard to whose roofing specifications have been used.

Many of you have asked me, "Why are you so strong for gravel surfaced roofs?" Here is my answer. Space permits me to deal only in fundamental reasons and positive evidence.

FIRST: ALL of the long lived, built up composition roofs in the United States and Canada, particularly on comparatively flat inclines (inclines of 4″ rise per foot and less) are surfaced roofs —roofs that have been well constructed in the first place and surfaced with gravel, or crushed rock, or crushed brick, or crushed slag, or shells, as is used in some sections. They number in the thousands and tens of thousands and stand as monuments of permanency in nearly every city in the United States. Only those that have been well built and well surfaced have stood the test of time. Their records of service without maintenance or repairs range from twenty to fifty years. I am presenting to you this one fundamental truth first, as that is the way it came to me, and I could not conscientiously ignore this great mass of evidence. Why should these roofs last longer than those having no finish of gravel or other inert material?

SECOND: The reasons "Why?" were apparent after considerable study and research work. Upon completing a country wide investigation, covering a period of months, of hundreds of built up roofs, built of every conceivable kind of material, under a variety of methods of construction, these conclusions were definitely established; viz: that the greatest destructive elements to roofs and roofing is light, or rather the short wave length radiant energy—generally spoken of as the "ultra violet rays." And the greatest life giving element is the bitumen—the asphalt; and the greatest protection to the bitumen is the finish—the gravel or surfacing material. We cannot stop the sun from shining, but we can meet the other conditions. We can increase the volume of bitumen and we can protect and finish our roofs so that the body of the roof remains unaffected for generations, and all this at comparatively small expense.

THIRD: It has been found that wherever there are shaded areas, wherever moisture is prevalent, roofs and roofing do not suffer as they do in locations where there is dry, hot weather for long sustained periods. This is now a well recognized fact and is indisputable. Roofs burn out and dry out far more frequently than they "rot out," to use a common expression. Roofs may have all the appearances of having "rotted" but they cannot and do not become decomposed until after they have lost their life—the bitumen used in their manufacture and construction. Therefore, there are two factors that are successfully employed in giving roofs long life and great resistance to destructive short wave length action. These are, as hitherto stated, a greater volume of bitumen (asphalt) and a finish or protection of stone (gravel).

FOURTH: To secure volume of bitumen (asphalt) it is necessary to have a conveyor or binder or base, as it may be termed, and this is known as "felt" or "roofing"; the latter being far more desirable in built up roof construction than the felt, for the simple reason that felt dries out quickly and is not weatherproof, while roofing is felt, plus a coating of bitumen (asphalt) on both sides and is a weatherproof and waterproof sheet in itself and of itself; thereby add-

ing greater volume of bitumen to the completed roof beyond that given by the use of felt. Successive layers of roofing bonded together with asphalt in two or more plies do not, however, provide sufficient volume of bitumen nor do they provide lasting protction against the destructive ravs of the sun, for all such roofs must be reconditioned or they require maintenance periodically. The volume of asphalt must be in a mass as it were, and an intergral part of the finished roof. It must be held in place and propertly protected with a finish of inert material of some kind, such as stone, gravel, etc. The gravel finish acts as a retainer to hold the volume of asphalt which should always be used on built up roofs of 4" rise per foot or less—50 to 60 pounds to each 100 square feet of area is ideal.

FIFTH: Besides holding or retaining this large mass or volume of asphalt which is the life and durability of the roof, the gravel used for this purpose functions as an efficient fire retardent. It is almost a physical impossibility to destroy by fire a well built up gravel finished roof. Such roofs do not communicate combustion; such roofs hold no fire brand hazard; they are automatically rated as Class A by the Underwriters' Laboratories and always take the base rate of fire insurance. Many buildings have been gutted by fire with the roof boards entirely burned away in places and the fire confined to the inside of the building, not breaking through the roof. It has been noted in many cases that this type of roof construction has a sort of a blanketing influence against fire and that when heat strikes the bitumen it cokes or carbonizes, according to the nature of the material used, provided a sufficient volume of bitumen is in the roof and particularly on the surface with plenty of gravel.

SIXTH: The gravel itself protects the mass or volume of bitumen. The particles of gravel embedded in the bitumen itself to hold it in place does not perform this function, but the surplus or loose gravel which is always in evidence on the well built up gravel roof cuts off the radiant energy from the sun from striking the asphalt **directly**. The stone particles **shade** the asphalt. The heat rays are converted into "sensible" heat and this heat reaches the roofing asphalt, but the short wave lengths do not reach the roofing because they cannot penetrate the stone. It is, therefore, obvious that a broad, flat expanse of asphalt exposed to the direct rays of the sun in a thin sheet (not more than 15 pounds to the hundred square feet of area can be applied without checking or alligatoring where gravel is not used) cannot be as effective an agent of protection to the body of the roof as three or four times that volume of asphalt, and then that asphalt protected in turn by tens of thousands of small stones, as is the case in gravel roof construction.

In this article I have not attempted to meet the occasional few objections that are made to gravel finished roofs, but shall do so in another article. Practically all of such objections have emanated from sales arguments and other propaganda and not from actual experiences. Two of the most common objections made are that leaks are harder to find in gravel surfaced roofs than in smooth surfaced roofs, and that gravel clogs up downspouts. The first objection has some foundation. They are harder to find for they are fewer in number, but most leaks do not occur in the body of the roof—they occur principally in or around flashings, outlets and connection—skylights and walls. A very small percentage of leaks occur in the body of the roof. The second objection is absolutely without foundation. Gravel does not stop up outlets if good roofing asphalt is used. Most outlets become clogged because of debris on the roof, such as paper, leaves and twigs, and because of low melting point asphalts of poor or unsuitable grade, either made so by some roofing contractors through the process of dilution or by the manufacturer for another purpose (for instance, road work) but used by some roofers because it is cheap and goes further than the better grades.

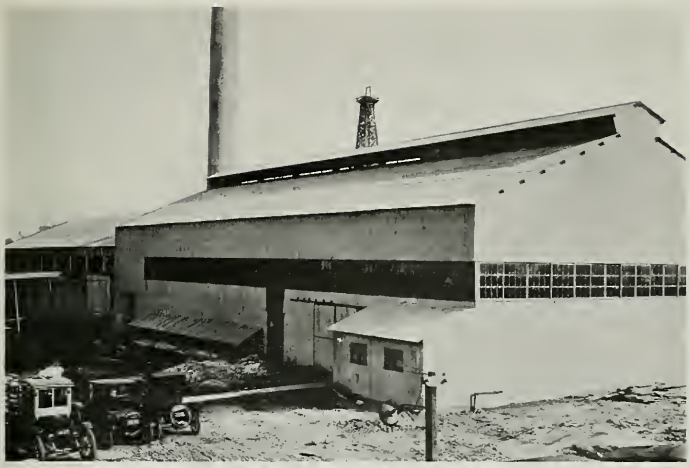
The gravel surfaced roof is particularly adaptable and economical for buildings of the industrial and school type—factories, mills, plants, warehouses, piers, stores, schools, colleges and municipal buildings—all buildings of a permanent nature, for the well built gravel surfaced roof stands the highest of all in permanency and the lowest of all in maintenance expense. That is its record in America.

Prepared Roofing Simplification

Thirty-five manufacturers of prepared roofing, by joint action, have done away with the sale of "seconds" of shingles made by those companies, as a part of a program of simplification undertaken with the cooperation of the Division of Simplified Practice, Department of Commerce. The report to the division received to-day states that the new program went into effect January 1, and that these manufacturers will offer for sale hereafter only such shingles as bear the Underwriters label.

Course of Lectures

Architect Sumner Maurice Spaulding has been engaged to give a course of lectures in Los Angeles on the history of architecture.



PLANT OF WESTERN SHEET GLASS COMPANY, TORRANCE, CALIFORNIA
Roofed and sided with galvanized sheet metal

Metal Roofs for Modern Industrial Plants

By FREDERICK JENNINGS

IN the field of certain types of industrial buildings, galvanized iron and steel roofs are rapidly displacing other kinds of roofing. This is but the natural evolution of the construction field, for industrial engineers and architects have always sought the material that is most economical in cost, longest in service life, and least expensive in upkeep. Galvanized iron roofing offers all these advantages and even more.

As to the matter of cost, galvanized iron is about 8 to 12 cents a square foot, depending on the gauge, with a slight increase for a specialty such as Armco ingot iron. Wood covered with tar and gravel costs anywhere from 8 to 12 cents a square foot; tile, concrete, and gypsum covered with tar and gravel averages between 30 and 35 cents a square foot. Not only is there a big saving in the cost of this metal roofing itself, but being lighter than other types of roofing its use permits lighter construction in the suporting columns and roof members. This further reduces the building cost.

Then the matter of maintenance must be given consideration. Galvanized iron roofing will last for many years, and if any repairs are necessary it requires only a few minutes to remove a sheet and put on another. This is quite an advantage.

Roofs must be weatherproof. There is a lot of truth in the saying: "A building is no better than its roof." It doesn't pay to install expensive equipment under a roof that leaks or does not give the proper protection from the weather. Sheet iron roofing provides an ideal kind of protection.

From a construction viewpoint (the speed with which metal roofing can be supplied) there is nothing to compare with metal roofing. The corrugated sheets run in foot lengths from five to ten feet and are 26 to 27½ inches wide. They are secured to steel purlins and given an end lap of 4 to 6 inches (depending upon the pitch of the roof), and a side lap of one and one-half corrugations. The sheets are quickly and permanently riveted or clipped to the purlins every 10″ or 12″—a tight and durable roof is thus assured. Moreover it does not require a skilled craftsman to do the work.

Many industrial plants are not only roofed, but are also sided with galvanized corrugated sheet metal. The results are pleasing. Corrugated siding is clipped or riveted to steel girts in the same manner as the roofing sheets are secured to purlins. One corrugation side lap and three or four inch end lap is considered good practice in erecting corrugated iron siding. Buildings of this

PACIFIC ELECTRIC RAILWAY SHOPS, TORRANCE, CALIFORNIA
Galvanized iron roofs and sides

SEED HOUSE FOR THE SAN DIEGO OIL PRODUCTS COMPANY
Over 32,475 pounds of 26 gauge Armco Ingot Iron used for roof and sides

type combine economical constuction with strength, durability and trim appearance.

Experience has proved that for industrial plants it is inadvisable to use lighter than 22 gauge metal for roofing, and 26 gauge for siding.

Of course it is readily realized that the use of sheet metal is more than an economical means of building an industrial plant; it is a fireproofing process as well. Every year fire levies a terrific toll, and industrial plants are heavy sufferers. The use of sheet metal minimizes the danger of fires. Insurance companies take this into consideration when fixing the rate, many of them allowing reductions of from 10 to 20 per cent. Over a period of years, this saving is enough to pay for the cost of the roof. Danger of fire from lightning is avoided by making a conductive connection with the ground.

As to the life of a metal roof, this is somewhat problematical. Much depends upon the inherent qualities of the metal and the conditions under which it is used. There are sheet iron roofs on residences that have seen 75 years of service, and they are still in splendid condition. There are industrial plants roofed with sheet iron that have been subjected to extremely corrosive conditions for years without apparent injury.

Along the coast, sheet metal is exposed to salt air. Iron will withstand this attack better than steel, because the iron is made by a refining process that practically eliminates rust promoting impurities that accelerate corrosion under adverse atmospheric conditions. For the same reason sheet iron will withstand the attack of sulphurus coal smoke, which forms an acid when it comes into contact with moisture.

The rust-resisting qualities of iron make it the logical material to use for roofing. It not only gives all the construction economies that go with sheet metal but also assures years of dependable service that does much to reduce maintenance cost—a drain on the earnings of all industrial plants.

New Line of Built-in Fixtures

The California Wall Bed Company, 359 Sutter street, San Francisco, announce that they are now sole selling agents for the Masterbilt Wall Fixture Company and dealers are being appointed in the principal cities of the Pacific Coast. This line includes every known combination of built-in fixtures and there are many patented features that will interest architects and contractors. The fixtures are manufactured by the Santa Barbara Lumber Company, Santa Barbara, California.

The Heacock Sash & Door Company of Portland, D. E. Fryer, Seattle, and the William O'Neill Company of Vancouver, B. C., are representatives in these cities.

A complete exhibit has been placed in the Building Material Arcade, 1040 South Broadway, Los Angeles, and also in the San Francisco and Oakland display rooms of the California Wall Bed Company. Architects and contrators are invited to visit these display rooms and to bring their clients.

Modern Cooperage Plant

One of the finest examples of modern electric motor application is the new plant of the Western Cooperage Company, 14th and Harrison streets, San Francisco. The complete electrical installation has been made by the Buzzell Electric Works, 532 Sansome street, San Francisco, which company specializes in industrial motor work, and almost without exception the direct coupled drive has been adhered to. All the equipment is Westinghouse apparatus, and interchangeability of motors throughout the entire plant is one of the salient features. Where slow speeds were required, specially built back gears provide for the use of standard speed motors to further the interchangeability feature. All starting equipment is automatic.

The Buzzell Electric Works is now working on plans for a similar installation for the Mercantile Box Company, Oakland.

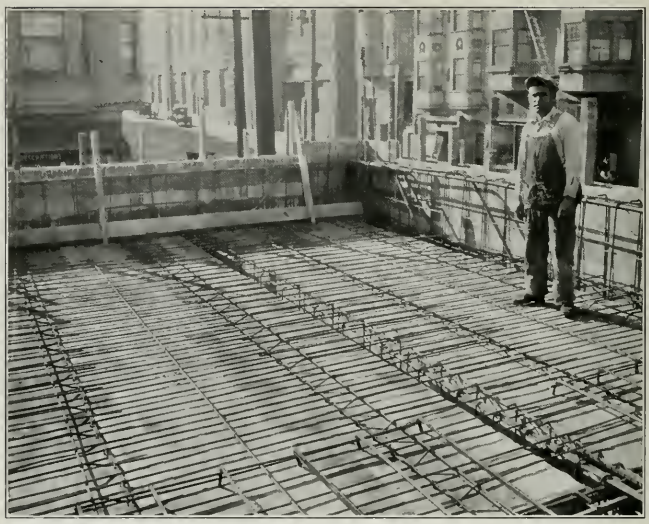
Reinforcing Bar Sizes

Mr. N. E. Dawson, secretary of American System of Reinforcing, Inc. of Los Angeles, states that the standard sizes for reinforcing bars adopted by manufacturers, members of the Concrete Reinforcing Steel Institute, do not apply to the Pacific coast, and for the present and until due notification has been made to the trade by Pacific Coast mills and distributors of reinforcing bars, no change will be made in the materials now being supplied. Pacific Coast mills and jobbers of reinforcing bars will, therefore, furnish only the following sizes:

Size	Sectional Area, Inches.	Max. Stock Length.
1¼ in. square	1.26	60 ft.
1⅛ in. square	1.27	60 ft.
1 in. square	1.00	60 ft.
⅞ in. square	.77	60 ft.
¾ in. square	.56	60 ft.
⅝ in. square	.39	60 ft.
½ in. square	.25	60 ft.
⅜ in. square	.14	60 ft.
¼ in. square	.06	40 ft.
½ in. round	.20	60 ft.
⅜ in. round	.11	60 ft.

Valve Company Moves

The Kennedy Valve Manufacturing Company announces the removal of its San Francisco office and warehouse to a new and larger building at 448-450 Tenth street.



PLACEMENT OF STEEL BAR UNITS, FLOOR OF BUILDING AT JACKSON AND MASON STREETS, SAN FRANCISCO

A Step Forward in Reinforced Concrete Construction

WITH the advent of Havemeyer specialties another forward step is taken in reinforced concrete construction methods on the Pacific Coast. Gunn, Carle & Company, of San Francisco, have been appointed representatives of this important manufacturing plant which is located at Chicago, Illinois. Havemeyer specialties constitute ingeniously designed steel contrivances, chairs, spacers, etc., which, when placed in position in conjunction with the reinforcing bar units of a concrete building, hold the bars rigidly in place in beams, concrete joists, flat floor slab, beam and girder floor systems, walls and also the fireproofed units of structural steel building skeletons.

The Gunn, Carle organization was prompted to introduce this line on the Coast by the desire of achieving increased strength and durability in reinforced concrete construction. It is recognized as of imperative importance that each member of the skeleton of a structure occupy exactly the position assigned to it by the engineer who is responsible for its design, in order that it may carry such stresses and strains as it is intended to take.

The accompanying illustration shows clearly the resulting precision of the placement of the steel bar units. The photograph shows the floor of a building at Jackson and Mason streets, San Francisco.

Regional Planning Congress

The International Congress on Town, City and Regional Planning will be held in New York City, April 20 to 25, at the invitation of Governor Smith, and of the American City Planning Institute, the National Conference on City Planning and several other associated organizations.

An exhibit of city planning material from all over the world—probably the largest and most comprehensive ever assembled—will be shown at the Hotel Pennsylvania and also at the Grand Central Palace, the latter as part of the exhibit of architectural and allied arts, under the auspices of the American Institute of Architects and the Architectural League of New York which will meet in conjunction with the city planning congress.

The congress will bring together the most prominent city planners in the world.

A City Planned Community

The ARCHITECT & ENGINEER

APRIL 1925

Published in San Francisco
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Published Monthly by
THE ARCHITECT and ENGINEER Inc.
626-627 Foxcroft Building-San Francisco
W. J. L. Kierulff, President — Frederick W. Jones, Vice-President — L. B. Penhorwood, Secretary

CLUB HOUSE AND ARENA FOR GOLDEN GATE POST NO. 40, AMERICAN LEGION, SAN FRANCISCO
MORROW & GARREN, ARCHITECTS

Frontispiece
The Architect and Engineer
April, 1925

THE
ARCHITECT
AND
ENGINEER

APRIL
1925

VOL. LXXXI
No. 1

Architecture or Building?

Work by Morrow & Garren, Architects

By IRVING F. MORROW

IF I were orthodox I should probably not countenance such an indiscretion as composing my own eulogy. I should impress into service some acquiescent colleague, who, under the combined stimuli of the seriousness of print and a fancied personal obligation, would write more or less as follows:

"To say that American architecture has been making enormous progress in recent years has become a commonplace. When Richardson and Hunt began their labors in rehabilitating building art in this country there was no tradition and little public appreciation. Today good architecture has become recognized as a public asset; the people demand it.

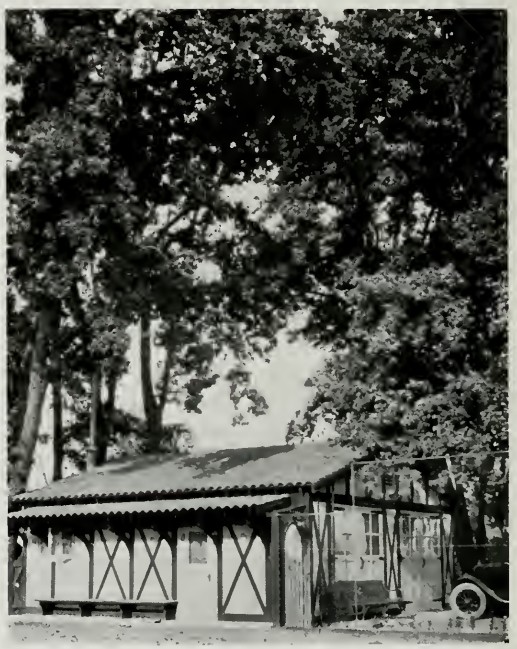
"Two causes have contributed to bring about this result. In the first place there is the marked advance in popular taste; and in the second place the increase in the number of well-trained and conscientious practitioners.

"While it is true that the impulse toward a new and better American architecture originally started in the Eastern states, other parts of the country have not been slow to develop important contributions, and none has outdistanced the West, particularly California. Here the spirit of adventure, the mild climate, etc., etc. * * In this renaissance of California architecture no influence has been more conspicuous or more fruitful than that of the firm of Morrow & Garren, the importance of whose works * *"

But why continue? You need only open any number of any architectural journal, make the required changes in geographical and per-

sonal names, and you have it, in all its depressing futility. The aspect of sincerity can be passed over for the moment. More immediately insistent is the inquiry, why must notices in the architectural press of necessity be eulogies? But this leads to additional questions as to the nature of architectural criticism and the purpose of an architectural magazine; and these are matters too lengthy to be touched upon lightly here and now. I reserve their discussion for a future occasion.

The most pertinent objection is that, from any seriously critical

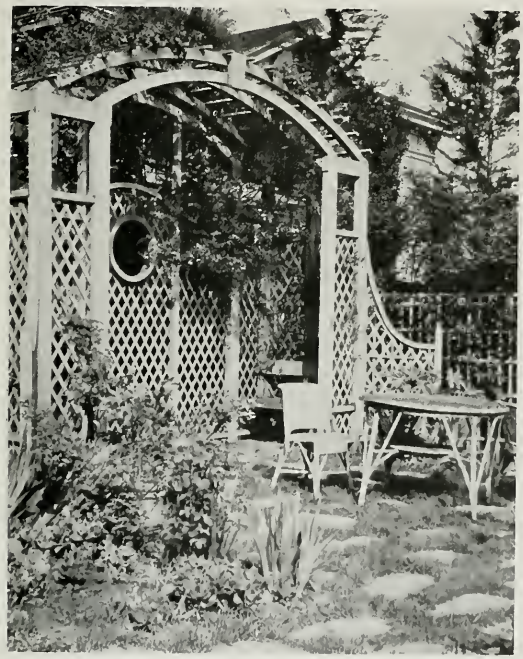


GARAGE FOR MR. H. V. KEELING, LAKEPORT, CALIFORNIA
Morrow & Garren, Architects

point of view, these buildings, of course, are not architecturally important at all. Every upstart designer seems to relish hearing his works talked about in the way subsequent ages discuss the things which endure from previous ones. A sense of humor should act as a corrective, even in the absence of a sense of proportion. It is, indeed, a tragic circumstance that the average architect, however amply qualified, never gets an opportunity to build anything which could assume an aspect of genuine architectural importance. By far the greater portion of current building is conceived, developed, and executed under conditions which

SAN FRANCISCO
PUBLIC LIBRARY

are effectual bars to such a consummation. It is not merely that most buildings are too small and ephemeral in construction to possess any large significance. Even those which might be presumed to offer hopeful possibilities are at some point vitiated by financial insufficiency, the limitations of clients, the inadequacy of workmen, or the ubiquitous impertinences of speculation. Against these forces an artist is impotent. His work is doomed to a greater or less degree of inconsequence, and the best he can do is to do the best he can do.



GARDEN FOR MR. AND MRS. H. B. ABDY, SAN FRANCISCO
Morrow & Garren, Architects

There is small likelihood, therefore, that most of the building done about us will possess serious abstract architectural importance. I mean by this that it neither marks a culmination nor points a way. It may have its own triumphs, but they are more likely to be administrative, decorative, or diplomatic. Which means that, while comment and explanation may be illuminating, seriously conceived criticism is more or less out of scale.

Then there is also the structural side to be considered. If on what I have called the social side modern architecture is harrassed by

irrelevant and unnecessary difficulties, on this side it suffers from insufficient ones. Time was when there was a necessary relation between a design and the method of its realization. Making due allowances for exceptions in degree, it might almost be said that the working out of the structure was the main thing. At least an architect had to give some consideraion to what he proposed to build, before deciding how he was going to make it look. There resulted a sense of structural consistency, which is the basis of worthy "style." One might almost go so

APARTMENTS, CALIFORNIA STREET, SAN FRANCISCO
Morrow & Garren, Architects

far as to say that precisely in those periods when the practical structural problems were the most absorbing and exacting did "style" reach its high points. Abstractly considered, it might have seemed reasonable to suppose that a relaxation of structural exactions would free more of the designer's attention for aesthetic considerations. Actually the result has been less happy. It has become so easy to build anything that we have become careless of what we build. We first complete our designs and then forward them to the engineer with the jaunty certainty that he will put over anything we have conceived, no matter how illogi-

cal. Under these conditions, "style" acquires the same meaning it has in millinery and dressmaking.

Ordinary buildings, therefore, like those shown on the following pages, can hardly be considered as the solutions of strictly architectural problems. So many considerations have generally intruded between the designer and his architecture—obstacles with which he should never have to contend at all—and he has been freed from the consideration of so many problems which are of the essence of his business, that they

HOUSE OF MR. AND MRS. F. M. SLOSSON, SAN FRANCISCO
Morrow & Garren, Architects

take on more an aspect of social documents than of aesthetic ones. Their importance is not demonstration of the heights to which untrammeled architecture may attain, but the suggestion that, for all the extra-architectural demands imposed by modern conditions, a little ingenuity may still save something for art.

These selections cover a period of some nine years. I believe the first thing to come from the office was the Clear Lake Union High School at Lakeport. It was work No. 101. I have forgotten by just what suggestions we attempted to insinuate the reality of the other

hundred jobs; but it turned out that the trustees recognized the 100 as a factor of safety, although too considerate to say anything; and as everybody ultimately (but of course reluctantly) got his name on the building, everything ended well. I may say in passing that I regard the practice of architects' signing buildings as one which should be encouraged; but I believe we have never attempted it ourselves except on public structures. The Clear Lake Union High School was unique in that all the architecture was not put on the outside for the benefit of

AUDITORIUM, LAKEPORT UNION SCHOOL, LAKEPORT, CALIFORNIA
Morrow & Garren, Architects

passing motorists; but some went inside for the occupants of the building. This wastefulness has caused considerable comment in the town; and in particular the strange device of tinting each of the classrooms a different color, when one uniform tone throughout the interior would have done, has been the source of much uncertainty as to our sanity and competence.

The Bank of Lake in Lakeport is interesting in that the original design contained not a single egg and dart. I do not so much as suggest that there is necessarily any virtue in eliminating eggs and darts from

banks; but at the same time it is an achievement which one contemplates with a certain personal satisfaction, not unlike escaping from a lunch counter without coffee, or from a barber shop without talcum powder.

There is probably no field of modern building more hedged about with unreasonable impediments to good design than that of ordinary stores. Before ever trying myself to design a store which had a chance of getting built, I used to wax eloquent over the stupidity of most stores which are built. (I am speaking of just stores, not "shoppes"). I have

STORE BUILDING FOR B. GETZ, SAN MATEO, CALIFORNIA
Morrow & Garren, Architects

now designed enough of them to lose interest in other people's failures.

A shop-keeper will heatedly insist that every inch by which his clear plate glass is restricted below the width of his rented space, every quarter-inch by which it is put behind the actual lot line, diminishes the chance of his goods being seen by passers-by. He will also relate how business was slack at his old stand until it occurred to him to install beaver-board panels painted white, whereupon business immediately picked up; thereby demonstrating that white beaver-board panels are essential to good business. All of which, and more, only shows that

commercial psychology is still a province of black magic. It would seem obvious that if there is one department of design where novelty for its own sake is justified by conditions, it is in commercial work. Yet always, at every turn, people who pride themselves on their progressiveness meet every new suggestion with the undeniable assertion that "you will not find it done that way anywhere." (Which is supposed to be final.) In the light of recent experience I feel that any store which is not actually stupid, is an achievement.

DESIGN FOR APARTMENT BUILDING
Morrow & Garren, Architects

In ordinary architectural practice there is no field less lucrative but more humanly enjoyable than domestic architecture. Here at least opportunity is open for the expression of personality, and the average client is a co-operator to the best of his ability, rather than an obstructionist. Naturally everyone wants too much for the money available. But these are difficulties which, within limits, pique an architect's ingenuity. At least where money is conspicuously insufficient it is an

honest lack, and not the devious hedging of speculation. Clients' pet ideas are often irritating in the extreme; yet most often so, perhaps, because they so tenaciously concern unessentials. I not infrequently find that on essentials we are much harder to satisfy ourselves than our clients. And in no kind of work is effort likely to receive such ultimate appreciation as in houses for intelligent clients. I suppose the theoretical artist, like the theoretical scientist, should be self-sufficient and immune from the necessity of petty recognition; but they are human after

DESIGN FOR APARTMENT BUILDING
Morrow & Garren, Architects

all. He may be fully aware that his houses are architecturally not epoch-making, nor even epoch-directing; but he likes to feel that they have performed a personal service personally.

I can not conclude without recording that, as critic, I have had unusual enjoyment in the writing of this article, because for once I have felt free to relax from a tone of high seriousness without fear of offending the architect.

SHOP, FEDERATED METALS CORPORATION, SAN FRANCISCO
MORROW & GARREN, ARCHITECTS

THEATRE, SAN MATEO, CALIFORNIA
MORROW & GARREN, ARCHITECTS

ALPER MEMORIAL BUILDING, SAN FRANCISCO
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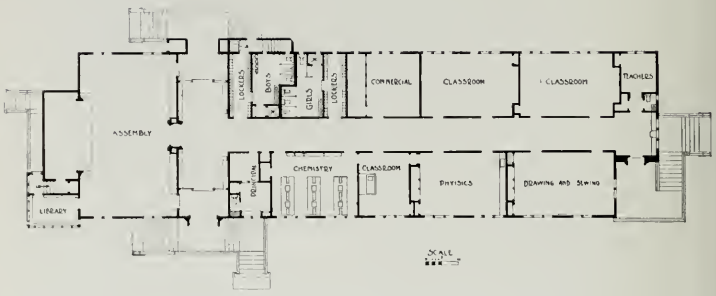
BANK OF LAKE, LAKEPORT, CALIFORNIA
MORROW & GARREN, ARCHITECTS

LAKEPORT UNION SCHOOL, LAKEPORT, CALIFORNIA
MORROW & GARREN, ARCHITECTS

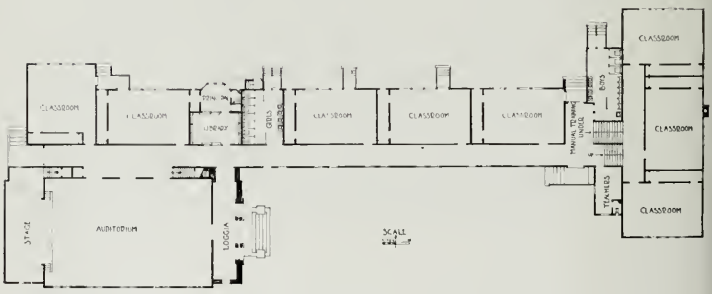
See plan, page 58

See plan, page 58

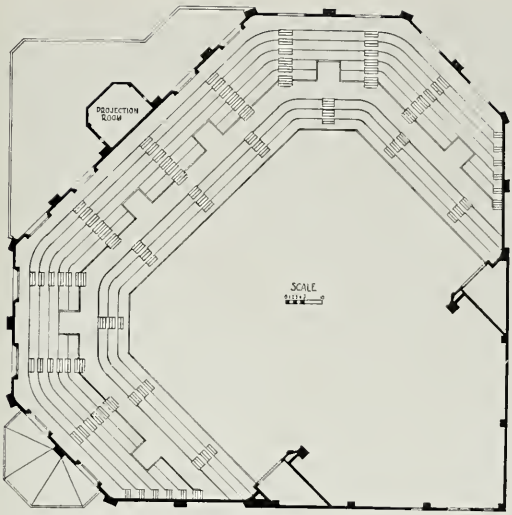
CLEAR LAKE UNION HIGH SCHOOL, LAKEPORT, CALIFORNIA
MORROW & GARREN, ARCHITECTS



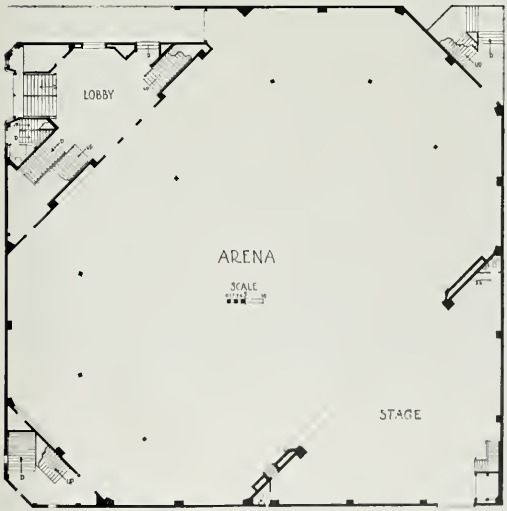
PLAN, CLEAR LAKE UNION HIGH SCHOOL, LAKEPORT, CALIFORNIA
Morrow & Garren, Architects. (See page 57)



PLAN, LAKEPORT UNION SCHOOL, LAKEPORT, CALIFORNIA
Morrow & Garren, Architects. (See page 56)



BALCONY PLAN

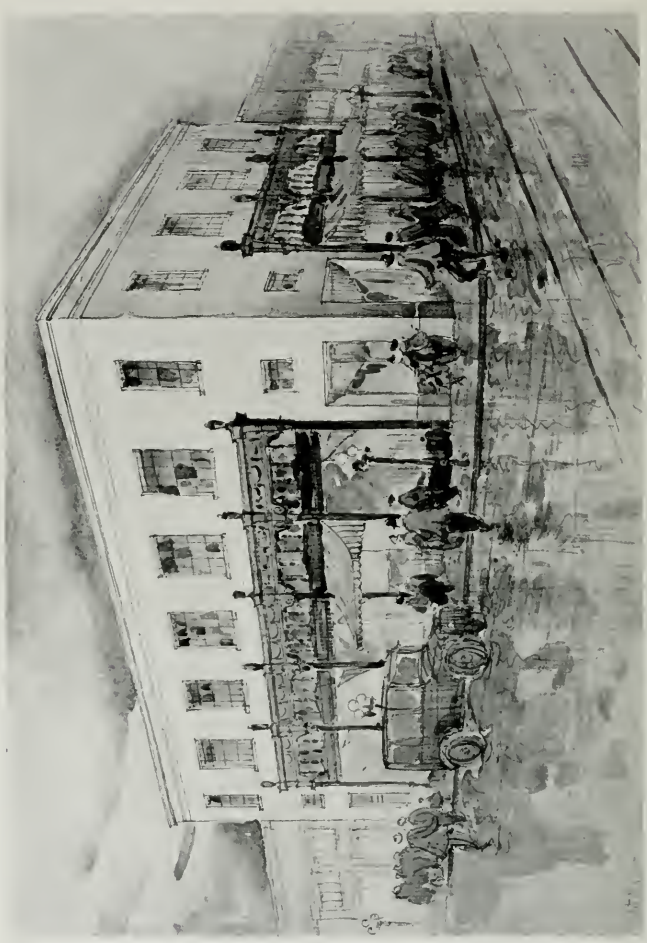


ARENA FLOOR PLAN, CLUB HOUSE AND ARENA FOR GOLDEN GATE POST NO. 10, AMERICAN LEGION, SAN FRANCISCO

Morrow & Garren, Architects. (See frontispiece)

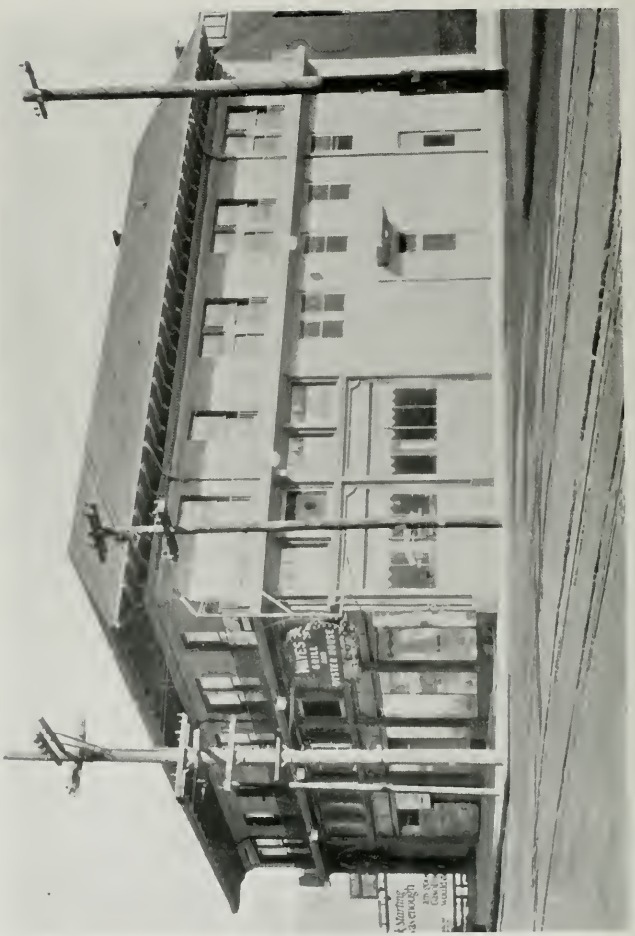
AUDITORIUM, JEWISH COMMUNITY CENTER, OAKLAND, CALIFORNIA
MORROW & GARREN, ARCHITECTS

JEWISH COMMUNITY CENTER, OAKLAND, CALIFORNIA
MORROW & GARREN, ARCHITECTS



DESIGN FOR STORE BUILDING, OAKLAND, CALIFORNIA
MORROW & GARREN, ARCHITECTS

DESIGN FOR APARTMENT BUILDING, SAN FRANCISCO
MORROW & GARREN, ARCHITECTS



OFFICE BUILDING, CLEMENT STREET, SAN FRANCISCO
MORROW & GARREN, ARCHITECTS

STORE BUILDING, CLEMENT STREET, SAN FRANCISCO
MORROW & GARREN, ARCHITECTS

BUILDING FOR GOLDEN GATE UNDERTAKING COMPANY, SAN FRANCISCO
MORROW & GARREN, ARCHITECTS

STORE BUILDING, SAN FRANCISCO
MORROW & GARREN, ARCHITECTS

STORE BUILDINGS FOR B. GETZ, WEST PORTAL, SAN FRANCISCO
MORROW & GARREN, ARCHITECTS

STORE BUILDING FOR B. GETZ, WEST PORTAL, SAN FRANCISCO
MORROW & GARREN, ARCHITECTS

BUILDING FOR NOAH WILLIAMS, SAN MATEO
MORROW & GARREN, ARCHITECTS

RESTAURANT FOR NOAH WILLIAMS, SAN MATEO
MORROW & GARREN, ARCHITECTS

STUDY FOR COMMERCIAL CENTER WITH THEATRE AND HOTEL FOR B. GETZ, SAN MATEO
MORROW & GARREN,
ARCHITECTS

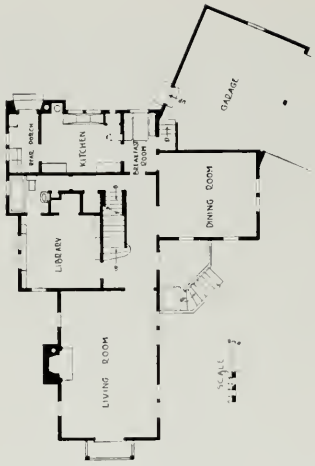
HOUSE FOR MR. AND MRS. HARRY CAMP, PIEDMONT
MORROW & GARREN, ARCHITECTS

See plans, page 76

HOUSE FOR MR. WM. A. POWELL, BERKELEY
MORROW & GARREN, ARCHITECTS

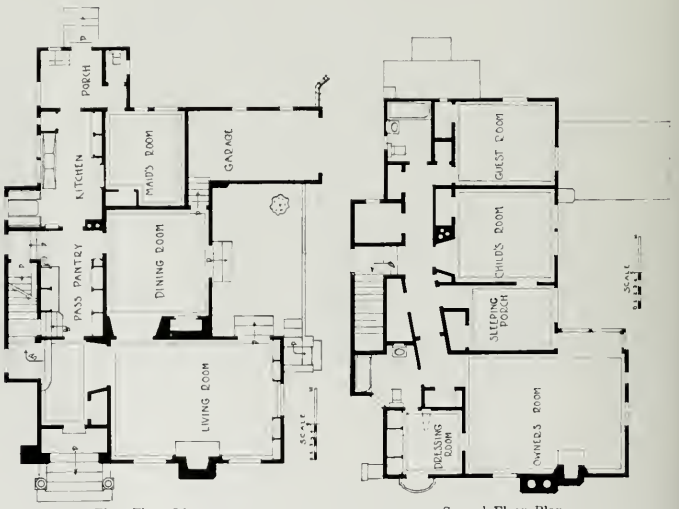
See plans, page 76

HOUSE FOR MR. WM. A. POWELL, BERKELEY
MORROW & GARREN, ARCHITECTS



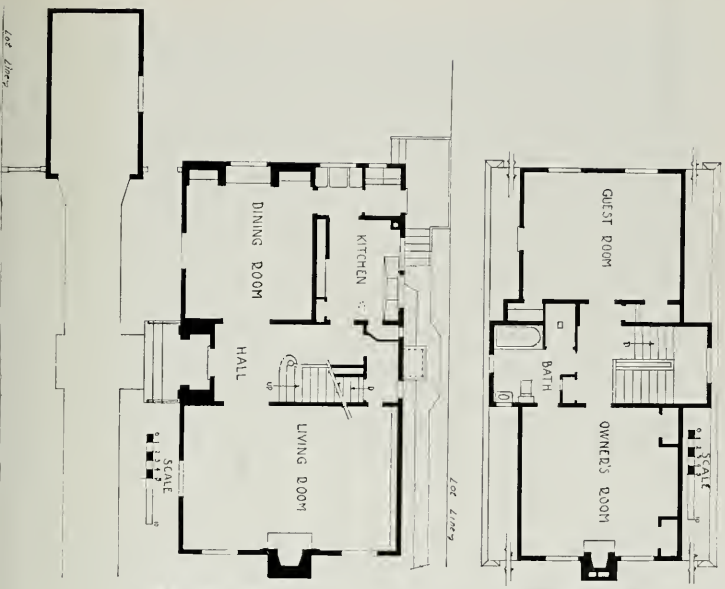
First Floor Plan Second Floor Plan

HOUSE FOR MR. BERNARD SILVERSTEIN, OAKLAND, CALIFORNIA
Morrow & Garren, Architects. (See page 81)



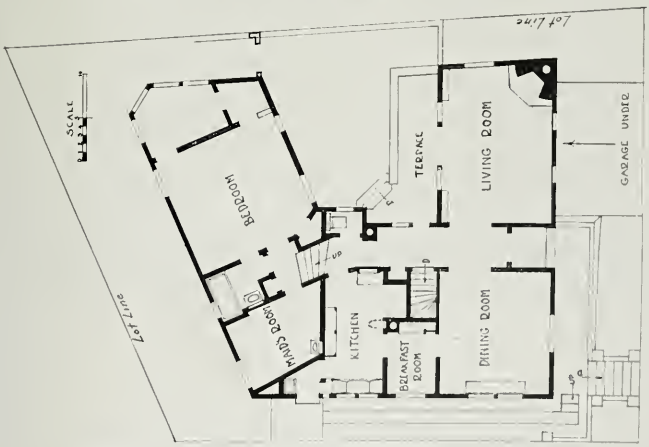
First Floor Plan Second Floor Plan

HOUSE FOR MR. AND MRS. WM. A. POWELL, BERKELEY
Morrow & Garren, Architects. (See pages 74 and 75)



First Floor Plan Second Floor Plan

HOUSE FOR MR. AND MRS. F. M. SLOSSON, SAN FRANCISCO
Morrow & Garren, Architects. (See pages 47, 78 and 79)



HOUSE FOR DR. AND MRS. MAURICE HEPPNER, SAN FRANCISCO
Morrow & Garren, Architects. (See page 80)

HOUSE FOR MR. AND MRS. F. M. SLOSSON, SAN FRANCISCO
MORROW & GARREN,
ARCHITECTS

HOUSE FOR MR. AND MRS. F. M. SLOSSON, SAN FRANCISCO
MORROW & GARREN, ARCHITECTS

See plan, page 77

HOUSE FOR DR. AND MRS. MAURICE HEPPNER, SAN FRANCISCO
MORROW & GARREN, ARCHITECTS

See plans, page 76

HOUSE FOR MR. BERNARD SILVERSTEIN, OAKLAND
MORROW & GARREN, ARCHITECTS

Suggestions for Making Advertising Matter of Value to the Architect

By ALBERT J. EVERS, Secretary,
San Francisco Chapter, A. I. A.

THE building industry utilizes such a wide diversity of materials, such a wealth of equipment, such an immense amount of manufactured and natural products of all kinds that it is impossible for anyone to catalog in his mind all of them except in a very general way. The sales managers attempt to keep their particular wares before the architect by means of advertising.

In approaching the subject of advertising, building material manufacturers in general realize that their direct sales are largely controlled by the specifications which are written in architectural offices. Therefore, their efforts are largely bent toward catching the eye and the attention of the specification writer. The value and uses of magazine advertising are too well known to need comment, but let us consider direct mail advertising.

Every architect receives with each mail delivery large quantities of advertising material, much of which is consistently "filed" in the waste basket. In the preparation and delivery of this literature there is much lost effort; not only are the manufacturers and dealers put to expense in publishing this vast array of propaganda for their product, but the architect's time would all be occupied if he even read over the piles of unsystematic and useless literature with which he is deluged.

The waste basket is the usual answer to the problem. If one tries to save the booklets, the pamphlets, the giant letters, the "house organs," the catalogs, large and small, he would require additional offices in a very short space of time.

"Elimination of waste and simplified practice" in advertising is necessary, as well as in processes of manufacture. The purveyor of materials and the architect can co-operate to change much that is undesirable in present-day methods; and many of the forward-looking manufacturers are pointing the way for their contemporaries in producing splendid advertising data and sales propaganda that is not just a momentary flash on its way to the waste basket, but becomes a record for reference in permanent files.

Co-operation for economy of time and effort is possible in the utilization of the filing system of the American Institute of Architects. This comprehensive system supplies the filing number and the method of filing for a great multitude of classifications. The architect can, at small cost, install this system into his office. Labeled folders for all the different classes of materials are supplied, ready to install in the standard office letter filing cabinet. Moreover, the manufacturer who applies is given the index numbers, which he can print directly upon his data sheets. He separates his different products for separate folders and can make his sheets as simple or elaborate as his taste or needs require.

All the material should be published on letter-size paper, preferably in loose-leaf form, and enclosed in a folder which has been indexed with the American Institute of Architects index number, ready to slip into the files. Here it becomes a part of the architect's library. The information is easy to find when it is required and is available on a moment's notice.

Surely this matter is of interest to all manufacturers and it certainly is to all architects, since they know only too well the many wasted

hours which are spent in looking over material which could well be placed in the file under its correct heading, to be found and perused when it is really required.

It is a pleasure to see advertising matter such as is published by the California Clay Products Co. of Los Angeles, and a recently published brochure called "Studies in Lime," which was issued by the Kelly Island Lime Co., Cleveland, Ohio. They are in such form that the architects possessing the American Institute of Architects filing system can use them in the drafting room or for reference without delay.

A circular of advice regarding size and character of advertising matter has been published by the American Institute of Architects and may be of some assistance to those who wish to make their advertising more permanent, accessible and useful. This document is in part as follows:

This circular relates to advertising matter intended to give such clear technical information about the thing offered that the architect may fully understand its nature and, when writing his specification, may describe it with all necessary precision. The architect desires to preserve this class of matter for reference, but finds the task a difficult one.

The American Institute of Architects therefore offers the following suggestions:

Size. The first difficulty lies in lack of uniformity of size. One thousand pamphlets, folders, etc., recently examined, presented 138 different sizes. It is obvious that the first desideratum is a standard size.. Fortunately there is a general consensus of opinion that the best size, all things considered, is that of the standard letter sheet, 8½ by 11 inches, the size of the paper on which this circular is printed. This size has the advantage of being readily filed in the standard vertical filing cabinets now generally in use.

The Institute, therefore, urges manufacturers to adopt 8½ by 11 inches as the size of all catalogues, circulars, etc., intended for preservation by architects.

The Institute recognizes that, in addition, a smaller standard size might be desirable, but as yet there appears to be no consensus of opinion as to what that size should be; 3¾ by 8½ inches has been recommended for pocket editions. A size approximately 4 by 6½ inches has demonstrated the suitability of its page for tabular purposes, as witness the Bethlehem, Cambria, Carnegie, and other handbooks. Yet unless there be the very best of reasons for a smaller size, the Institute recommends adherence to the 8½ by 11 inch standard.

Classification, with consequent division and subdivision of the matter in hand, is essential for ready reference. Therefore it is hoped that all catalogues, circulars, etc., should be issued as separate bulletins, each treating of but one subject. In no case should unrelated objects be described on two sides of the same sheet.

Character. Circulars intended for filing in architects' offices should furnish exact and specific technical descriptions with information in detail. Drawings of the parts or the whole, clearly and accurately made to scale, are of high value. Irrelevant matter, laudatory verbiage and testimonials from persons not especially qualified to pass judgment are worse than useless.

Dating. The Institute urgently requests that all circulars and pamphlets of the character described be dated in a prominent place. Architects can then know whether the information contained is sufficiently recent to warrant its acceptance without question.

Numbering or Indexing. It is recommended that all advertising matter carry a serial number. Thus when new editions are sent to architects, they may be asked, whenever it is so desired by the manufacturer, to destroy any previous bulletin and the number given as an instruction. Such numbering also permits intelligent cross-reference in cases of necessity.

To sum up, manufacturers who present clear technical information conveniently divided for classification, and printed on sheets of the standard size, are far more likely to have their matter preserved and used than those who do not.

The architect wants information quickly, and manufacturers wish to present it in such form that he may so obtain it.

About 90 per cent of the advertising matter at present mailed to architects goes into waste-baskets, because it is either useless or impossible to file.

The 8½ by 11 inch size is adaptable to filing cabinets generally in use.

It permits letters containing valuable information and data to be attached to pamphlets as a part of the reference.

Space is provided for illustration and detailed drawings on a scale large enough to be really useful.

One 8½ by 11 inch page will generally carry as much matter as two pages of 6 by 9 inch size. This saves one-half in filing space, a matter of the utmost importance.

Here are a few general suggestions:

Avoid the use of heavy covers—they invite destruction on account of their bulk and offer no adequate return for their extra cost.

Avoid any change from the dimensions, 8½ by 11 inches, as material which is smaller than standard size is likely to be overlooked.

Avoid the use of one pamphlet for the description of materials of different character.

Some Eastern manufacturers have sent out perfect advertising material, beautifully printed and indexed, in folders, all in readiness for the files; their materials were specified in numerous cases, but alas, they often have made the great mistake of having no stocks on the Pacific Coast. The delay in shipment is disastrous to continued sales, and all the effort made by manufacturers to improve their advertising material will be lost unless they have the goods for prompt delivery.

Also, it is needless to say, in order to utilize and obtain the benefit of the manufacturers' efforts, the architects must install the Institute filing system in their offices. The expense is slight compared with the benefit derived, and the net result will be a great saving in time and energy for all those who have to do with the supplying and specifying of building materials.

* * * *

Twenty-Four Million Citizens Benefit by Zoning

HEADED by the cities of New York, Chicago, Boston, Baltimore, Pittsburgh and Los Angeles, a total of 320 municipalities throughout the United States, with a total population of more than 24,000,000, had zoning ordinances in effect on January 1, 1925, according to information obtained by the Division of Building and Housing of the Department of Commerce. The municipalities range in population from the city of New York with its millions of inhabitants down to the smallest villages.

sought to protect home owners, and other land owners, in the reasonable

In adopting zoning ordinances, these cities, towns and villages have use of their property, according to Dr. John M. Gries, Chief of the Division of Building and Housing. Zoning seeks so to regulate the use to which buildings may be put, the area of the lot which they may cover, and their height in different sections of the city, that the land in each district may be used for the purposes to which it is best suited A neighborhood of small houses, for example, is secured against having a noisy factory site in its midst, with losses not only in peace and quiet, but in property values. The factory owner, on the other hand, is apt to have a better choice of desirable level plant sites with good transportation facilities, and provision is made in properly drawn ordinances for the orderly expansion of the central business district.

Sixty-two municipalities zoned during 1924. Of this number twenty-eight have a population of less than 10,000 inhabitants; twenty-one have more than 10,000 and less than 50,000 inhabitants; and thirteen have more than 50,000 inhabitants.

Of the total number of zoned municipalities 199 have zoned comprehensively, regulating the use, height and area of buildings, while 121 do not go quite so far, many regulating only the use of buildings and some few regulating the use and area or the use and height of buildings.

Forty-four out of the sixty-eight largest cities in the United States, with a population of more than 100,000, have zoning ordinances in ef-

fect. Of the combined population of all the cities having over 25,000 inhabitants, 62 per cent are receiving the benefits of zoning.

Prior to 1921 interest in zoning was not yet general throughout the country, and when the Division of Building and Housing was organized in the summer of that year only forty-eight cities and towns were zoned. The rapid growth of the zoning movement is indicated by the fact that 159 municipalities were zoned by January 1, 1923, and 259 were zoned January 1, 1924. The first comprehensive zoning ordinance in the United States was adopted by New York City in 1916, although Los Angeles, Calif., passed a "use" ordinance in 1909, and Boston, Mass., regulated the height of buildings in 1904.

New Jersey still leads in the number of zoned municipalities, having seventy-two; New York has fifty-six; California, thirty-eight; Illinois, thirty-six; Massachusetts, twenty-four; Ohio, twenty-one; Wisconsin, fourteen; Michigan, nine; Indiana, five; Kansas, Missouri, Pennsylvania, Rhode Island and Virginia, four each; Florida, Minnesota, Oklahoma and Washington, two each; and Alabama, Arkansas, Colorado, Connecticut, Delaware, District of Columbia, Georgia, Iowa, Maryland, Nebraska, Nevada, North Carolina, North Dakota, Oregon, South Carolina, Tennessee and Utah, one each.

An increased interest is being shown by the people of the United States in the enactment of zoning legislation to control the use, height and area of buildings in various districts in their communities, and in consequence zoning laws have been enacted or are being considered by nearly every state in the Union. The first step is to adopt a state zoning enabling act, after which the authorities of the cities, towns, boroughs, villages or other municipalities may legally adopt zoning ordinances to fit local conditions.

The legislatures of thirty-four states meet during 1925. Most of them are now in session and zoning legislation is receiving more than passing attention due to the widespread interest in the subject shown by the public at large.

Zoning legislation has been strengthened materially through the use by state legislators considering zoning legislation of "A Standard State Zoning Enabling Act" that was prepared by the Advisory Committee on Zoning of the Department of Commerce to serve as a model for those desiring to introduce zoning legislation in their states. The great care used in the preparation of the Standard Act has contributed much to its favorable reception. The states that used the Standard Act in whole or in part since its tentative publication in 1922 are as follows: Colorado, Delaware, Illinois, Iowa, Nevada, New Jersey, North Carolina, North Dakota, Oklahoma, Pennsylvania, Rhode Island, South Carolina and Wyoming.

* * * *

An Architect's Joke

A joke played on the town council of Windsor, England, nearly 300 years ago by Sir Christopher Wren, the famous British architect, has just been revealed. The town hall was started by another architect and completed by Wren. The town council thought it needed four large pillars to support it in addition to the heavy beams used by the first architect. Wren said it didn't, but the council insisted, so Wren put in the pillars. Workmen have found that Wren's pillars never have supported the building; that there is space between them and the lower framework of the structure, which Wren hid by a thin crust of mortar.

CATHEDRAL CHARTRES

A Walking Tour to Chartres

(From The Wanderer's Note Book)

By E. N. KIERULFF, R. S. M.

BETWEEN Paris and Chartres there lies a stretch of country untouched by railway lines, but reached by excellent roads through fine old valleys and across three great plateaus. Scattered through this region are several lovely old towns famous ages ago for their feudal barons who held the countryside from their chateaux, and ruled masters of all they surveyed.

Going by rail to Chevureuse-St. Remy and from there starting by foot one takes the road to Dampierre, the next town beyond, lying in a broad fertile valley with densely wooded hills and fed by a small stream—the chateau of Dampierre, with its great park and gardens commands the town, and is the seat of members of the old family who reside there the better part of the year. It has been restored somewhat, but retains its appearance of age in its softened tones and the blackened stone of terrace and balustrade. The main gates give off the departmental road through the town and are exceptionally fine examples of grill work. The approach is broad over stone pavements flanked on either side by spacious quarters for servants, the stables and the general staff of the menage—the southern exposure gives on to the gardens which finally give way to the forest of the park. Seen from the north it appears without any special setting; seen from the south it is perfection in the blending of buildings and gardens.

From Dampierre the road leads through a delightful countryside past the village of Senlisse, built on the slope of the wooded hills; later the road forks at the beginning of the first of the plateaus mentioned and the way leads across this and past farms and tilled fields, orchards and meadows to a tiny place—Cernay La Ville where we may lunch out of doors in a lazy, peaceful atmosphere. South across the plateau down into a long valley, up again and down once more, brings the traveler to Rochefort, dominated by its chateau and church on the steep hillside. The church is very old but was unfortunately closed, which is unusual, so no inspection of the interior was possible. A short distance from Rochefort in beautiful grounds and surrounded by a wooded park, stands the cha-

WEST PORCH, CATHEDRAL OF CHARTRES

ENTRANCE EAST WING PALACE OF THE BISHOP OF CHARTRES

WASH HOUSES, RIVER EURE CHARTRES

FRONT FACADE, CATHEDRAL CHARTRES

teau of the Ducs de Mornay, an ancient family whose later members maintain their residence here—a fine old pile with steep roofs, great towers and fine windows. It is approached by a long curving driveway through lawns and shrubbery. Due to the family being in residence it is closed to visitors, but even the view of the exterior is worth the visit. From here the road leads up and down through a series of small valleys to Dourdon, an interesting old town with a keep and ancient watch tower and a rather fine old church whose interior is spoiled by too much decoration and too much light.

WEST WING, CHATEAU ST. MESME

This beautiful structure has been declared by writers to be the jewel of all the French chateaus.

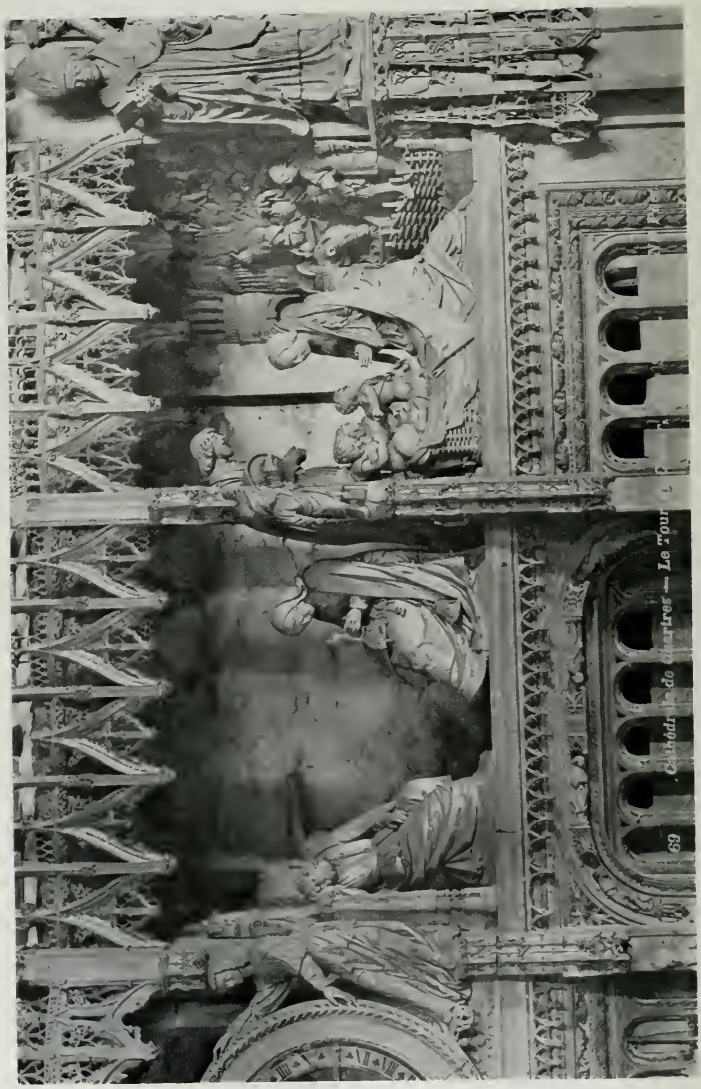
At the next town—St. Mesme, however, stands the jewel of them all—a chateau now the residence of a private citizen, containing a park and gardens in which one could easily spend weeks. With an east and west exposure, sunken gardens, and a small lake, this chateau has, next to Chateau de Vaux-le-Vicont, one of the most charming and delightful settings that I have seen in France. The building of softened cream-colored stone and fine old brick has two ancient round towers, a vaulted and arched gateway with a beautiful gothic door as entrance on oneside, while on the east facade there is a graceful double stairway with a porch and balustrade in gray stone. Reparations were under way, making an inspection more or less impossible but from the general ensemble one had the impression of fine large rooms.

WEST FACADE, CHATEAU ST. MESME OLD AND NEW PORTION

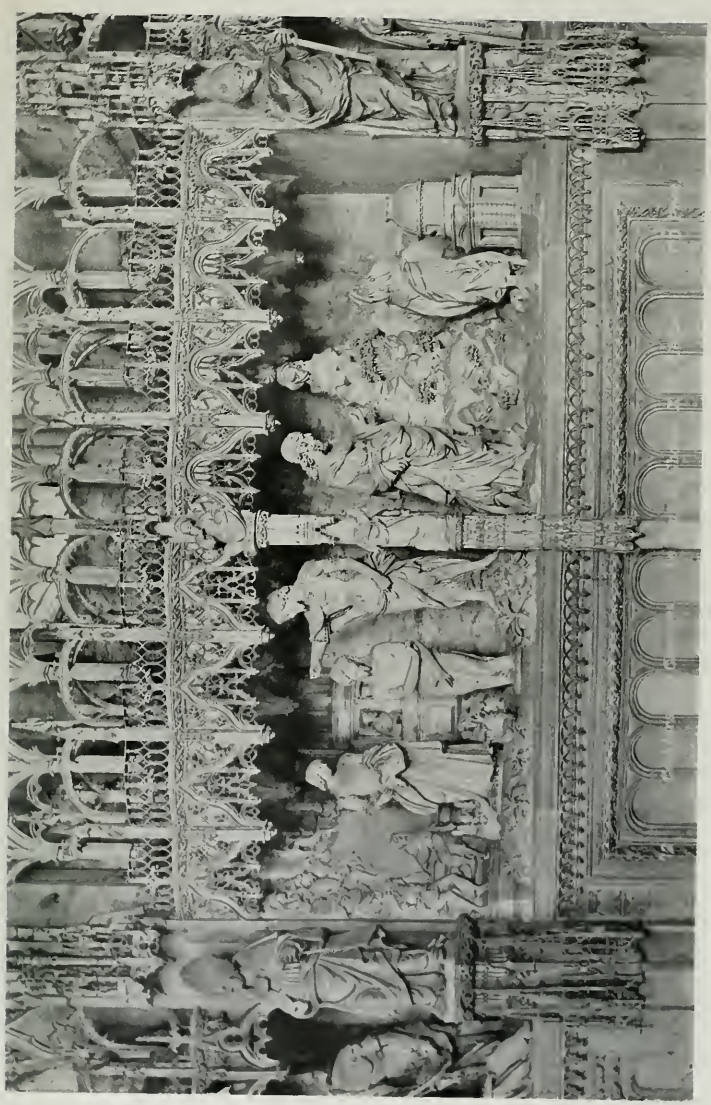
From St. Mesme the country soon becomes uninteresting as the road climbs up to the last and the largest plateau upon which Chartres is situated on a bit of rising ground.

One of the ancient towns of France, this place has retained much of its quaintness and its age, dominated by its superb cathedral and palace of the old bishops of Chartres. The cathedral is one of the finest in France and takes its place among the famous churches of Europe. Its two towers, unequal in height and in style, give it an unusual appearance yet detract nothing from its general scale of magnificent proportion and nicety of detailed outline. The glass in the cathedral is world famous, its rose windows unlike any others in their delicacy of detail, tracery and beauty of glass and design. A lofty, dim, vast interior, lit by the soft radiance from its lovely windows, makes it a pic-

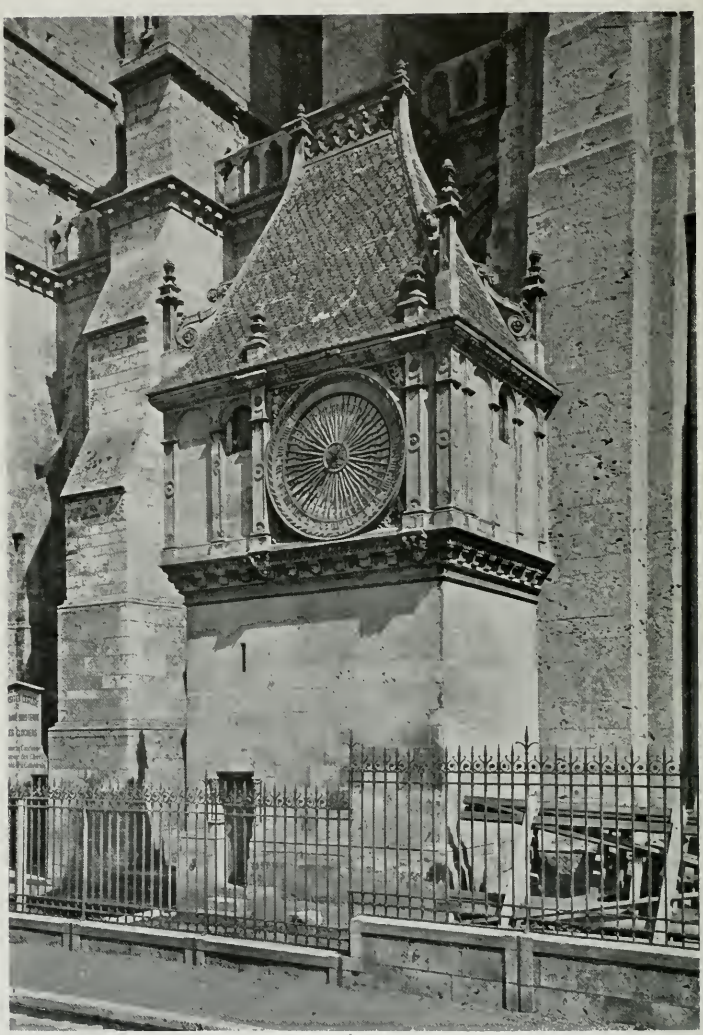
SOUTH WING, CHATEAU ST. MESME



CHOIR LOFT, CATHEDRAL DE CHARTRES



CHOIR LOFT, CATHEDRAL DE CHARTRES



CLOCK AND TOWER, CATHEDRAL CHARTRES

Note detail and richness of sculptured figures

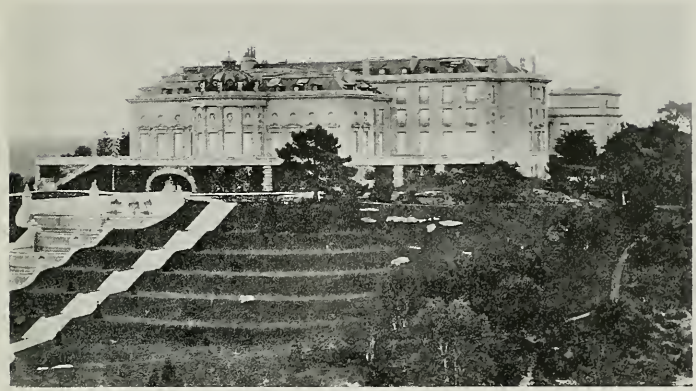
MERIDIONAL DOOR, CATHEDRAL CHARTRES

SOUTH PORTAL MAIN FACADE, CATHEDRAL OF CHARTRES

TRANSEPT, CATHEDRAL DE CHARTRES

Note detail of wood carving

OLD HOUSE, CHARTRES



CHATEAU DE ROCHEFORT-EN-YVELINES

ture to hold the traveler in awe and admiration, reverence and respect for those who so many years ago could build such monuments as this. The carvings and the two porches on the east and on the west sides are ranked among the finest in church decoration in point of fact. The porches of the Chartres cathedral are unique in church design and have been discussed and pictured by architects from all lands.

GENERAL VIEW, CHATEAU DAMPIERRE

CHATEAU DE DAMPIERRE
South Exposure and Gardens

Thus in four days the traveler, if he be willing to wear stout shoes and carry a kit bag, can have one of the most delightful and edifying short trips out of Paris and return feeling that he is a thousand fold repaid for his time and he is the better for his walk in health and in pocket.

IRON GRILLES, GILDED GATES, CHATEAU DE DAMPIERRE

Longview—A City-Planned Community

WHEN The Long-Bell Lumber Company extended its lumbering operations to the Pacific Northwest and selected a site on the Washington bank of the Columbia river for the location of lumber manufacturing plants which were designed to become the largest in the world, the officers of that company quickly realized that the site of Longview offered greater possibilities than just growing into a small mill town—it had the potentialities of becoming one of the great cities of the Pacific Northwest.

With his usual foresight and vision, Mr. R. A. Long, in whose honor the city was named, conceived the idea of building on this spot a modern American industrial city which would not have to be built over in a few short years due to lack of planning which has been the cause of so much city remodeling. Mr. Long called into consultation nationally known city planners, architects and engineers, landscape architects and real estate operators. These men, together with company officials and engineers, planned the city of Longview before any building was permitted to begin. The city plan as drawn up by Messrs. Hare & Hare, Kansas City landscape architects, and supervised by the late George E. Kessler, architect, provided for broad streets and boulevards, parks and playgrounds and for city zoning. Under the city zoning plan certain sections of the city were designed as manufacturing districts, retail and commercial districts, residential districts and apartment house districts. A place was provided for everything and everything in its place.

After these city builders had completed their plans for a new and modern industrial city with no congestion, no mean and narrow business streets—then, and not until then, did the building of the new city begin. Longview was formally dedicated on July 12, 1923. Thousands of people came to see the new city which was being built from the ground up. A year later many of those who had attended the dedication of the new city returned with thousands of others to help this carefully planned city celebrate its first birthday. The building which had been done in that brief period of a year was nothing short of astounding. In a year's time there had been erected lumber manufacturing plants consisting of twenty-eight structures and covered by thirty-four acres of roof. Docks on the Columbia river, 1400 feet long and designed to support 1000 pounds per square foot were almost completed. The new city had become a port of call for ocean-going freighters, four of which could be accommodated at the same time at the Columbia river docks.

On its first birthday, Longview had a population of over 5000, 850 homes and 281 business enterprises. They saw a year-old city with a six-story modern fire-proof hotel with 200 rooms. Three smaller hotels had also been built. The modern platoon school system with twenty-four teachers and 932 students had been developed. Longview had a daily newspaper, a community church of 400 members, and two banks with combined deposits of over a million dollars. Ten miles of streets had been paved with concrete, thirty-two miles had been graveled and fifty-eight miles graded. Seventeen miles of concrete sidewalks had been put in. Thirty-two miles of water mains had been laid, twenty-seven miles of storm and sanitary sewers, large enough to serve a city of 100,000 population had been provided. Besides the Long-Bell lumber manufacturing plants, a railroad car building plant, a concrete brick plant, a concrete pipe and tile plant, a straw board and paper mill had located at Longview and more industries were in prospect.

AIR PLANE VIEW, SHOWING HOTEL MONTICELLO AND JEFFERSON SQUARE
LONGVIEW, WASHINGTON

AIR PLANE VIEW, DOUGLAS FIR PLANT, LONG-BELL LUMBER COMPANY
LONGVIEW, WASHINGTON

STORE BUILDING FOR COLUMBIA RIVER MERCANTILE COMPANY, LONGVIEW, WASH.

HOTEL BROADWAY AND DAILY NEWS BUILDING, LONGVIEW, WASH.

COMMUNITY HOUSE, LONGVIEW, WASHINGTON
GEORGE E. KESSLER, ARCHITECT

TYPE OF HOMES AT LONGVIEW, WASHINGTON

TYPICAL RESIDENCE STREET, LONGVIEW, WASHINGTON

Longview has transportation facilities which would be envied by many a metropolitan manufacturing city. Situated on tide water on the Columbia river, Longview is already a stopping place for ocean-going vessels. The water transportation facilities are especially important when it is realized all of the ports of the state of Washington are over three hundred miles closer to Yokohama, Shanghai and other large Oriental ports than any of the other ports of the United States.

Rail transportation facilities are equally as good as the facilities by water. The city is served by three great transcontinental railways—the Northern Pacific, Great Northern and the Union Pacific.

The story of Longview since the celebration of its first birthday has been one of continued, gradual growth. A dozen more business enterprises have come in and seven hundred new homes are being planned and built in Longview as well as new business buildings. The Longview post office was advanced from fourth to second class and carrier service was installed on March 1. The Longview High School set a state record by being accredited to schools of higher learning during the first year of its existence.

Longview will be greatly benefited by the recent announcement of a gift of one million dollars from the personal fortune of Mr. R. A. Long, which he will give and which will be spent within the next five to seven years in doing for the new city a number of things which they could not well do for themselves without assuming a tax burden. A part of the gift is to be spent very soon this year in the erection of a new library-community center building at the Longview Civic Center. The remainder of the gift will be used mainly for public buildings and in beautifying the parks and boulevards.

* * * *

Structural Steel Interests Active

The Structural Steel Institute of California has recently been organized. This organization is affiliated with the American Institute of Steel Construction in carrying out a broad program, namely:

To further the interest of structural steel in its fabrication, erection and use through the medium of constructive cooperation.

To enable the industry to profit through the use of a standard code of practice.

To develop new uses and broader markets through the promotion of instructive and educational campaigns and to develop the application of better methods in order that the mills, architects, engineers, contractors and the public may derive equal benefits.

This program has the endorsement of Secretary Herbert Hoover, and would seem to merit the approbation of the building industry generally.

* * * *

For Reception Halls

A very beautiful ivory and gold treatment for reception halls is as follows: The woodwork is finished in ivory enamel, which may be rubbed or left in gloss. After allowing plenty of time for hardening, mouldings are gilded. This is done by coating them with a thin wash of whiting and water. Next an oil gold size is applied to the high members of the moulding, not running it into the quirks or depressions. After the size has dried for twelve hours gold leaf is applied. The gold is polished smooth with a cotton pad. This polishing removes the surplus whiting—the whiting is used to prevent the gold from sticking to anything but the size.

SAN FRANCISCO
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WHAT THE TEREDO ACCOMPLISHED IN TWO MONTHS AT CROCKETT, CAL. Wooden pile driven May, 1924, and pulled September 19, 1924. First attack of Teredo on July 15. Pile 12 inches in diameter completely riddled by Teredo at the mud-line shown in split sections. Courtesy of Prof. C. Derleth.

The Hardy Teredo

By CHARLES A. KOFOID,
Professor of Zoology, University of California

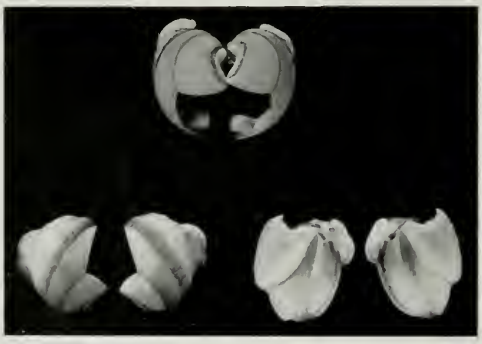
STRUCTURES of timber in salt water have long been known to be subject to the attacks of the shipworm. This "worm" is in reality a highly modified relative of the salt water clam which has been transformed into an elongated worm-like structure with a bivalve body at the head or deeper end, enclosed by the two shells which typically characterize the clam. These shells bear deep ridges on the outer surface which serve as delicate but efficient tools by means of which the mollusk bores its way through solid timbers. There are scores of kinds of these boring mollusks. Some attack wood, others attack shale, and even harder rocks. Recently they have been known to enter cement structures in sea water.

They are apt to escape the detection of the casual observer of marine structures, since they enter the wood or rock as small, almost microscopic larvae which bore their way into the underlying substratae and enlarge their burrows as they grow older. From this minute orifice they are able to draw in water necessary for respiration and for the bringing in of food supply which is suspended in the water. A badly infected and almost completely destroyed wooden pile may thus be completely honeycombed and more than half of its contents replaced by the burrows of these destructive mollusks. In this way floating timbers, logs unprotected by their bark, piling underneath wharves and piers, the exposed wood of ships and barges, and in fact any wooden structure may be attacked and destroyed.

The rate at which this destruction occurs is a function of the kind of borer, the season of the year, and the condition of the water in which the structure stands. Under favorable conditions at the height of the growing season in San Francisco Bay 6 by 8-inch Oregon fir timbers, or piles a foot or more in diameter may be almost completely riddled by the borers within the short space of six weeks in the period from September to December. The destruction thus comes with suddenness and is often unsuspected or undetected.

*Courtesy of California Monthly, University of California.

For many years, in fact ever since marine structures were built in San Francisco Bay, they have been subject to the attack of these borers, especially below the narrows which lead into San Pablo Bay. Above that point their attacks prior to 1916 had been practically unknown, but at that time a few were reported in the Mare Island dykes. By 1920,—a year of low water and increased salinity in the upper bay region,—the attacks became widespread and reached as high up as Antioch, structures beyond Carquinez Straits up as far as Avon being severely attacked by these borers. The species present in this attack from 1916 on was the notorious and widely known teredo navalis, or shipworm of the Holland dykes, noted for its recurrent attacks in the brackish waters of that maritime country in the sixteenth and seventeenth centuries and later. Prior to this time this species had never been reported from the Pacific Coast and it is quite possible that it is a recent introduction carried from other shores in the bilge water or tanks of shipping in which submerged wood was exposed. The borer breeds in San Francisco waters from about the first of July until the end of the year. During this time the seasonal crop of larvae is spread by the holdover animals of the previous year's infection. It is later augmented by the



THE TEREDO'S CUTTING TOOL

breeding of the teredos of the year, which may produce larvae at the age of three weeks. The late summer and fall is therefore a season of ever-augmenting attack upon marine structures wherever this species is present.

The other species, bankia setacea, a much larger form long known in San Francisco Bay, is restricted to more saline waters, is not known to occur in San Pablo Bay or above, in any numbers. This borer sometimes reaches a length of four feet and has a burrow 7/8-inch in diameter when growing most luxuriantly. Teredo navalis, on the other hand, is a much smaller borer, from three to fifteen inches in length, with a burrow of a maximum diameter of 5/16-inch.

The peculiar adaptability of teredo navalis to live in waters of less than normal salt content makes it a peculiarly dangerous species in estuarian harbors, such as San Francisco Bay and the Carquinez Straits region. It therefore invaded territory from Mare Island to Antioch which throughout the previous period of industrial development had been exempt from the attack of borers. Piling installed in 1869 at Port Costa were attacked and completely destroyed in 1920 by this borer.

Through the activities of the San Francisco Bay Marine Piling Committee a thorough examination of the distribution, occurrence, breeding habits, relations of salinity and sewage, and life history have been carried on under the direction of Professor Charles A. Kofoid in the Zoological Laboratories of the University of California. This work was done under the supervision of a faculty committee appointed by the Board of Regents to co-operate with the San Francisco Bay Marine Piling Committee. Members of this faculty committee were also members of the larger San Francisco Bay Committee, most of whose personnel was drawn from the leading engineers of the larger corporations operating in or having investments in the San Francisco Bay region. In the work of this committee Professor Kofoid served as member of the Executive Committee and also as Chairman of the Committee and also as chairman of the Committee on Biological Research. He was also instrumental in having established under the National Research Council at Washington a national committee on marine protection in which he also served as chairman of the sub-committe on biological research. Much important material was contributed by him and his collaborators to the report of the National Research Council Committee recently published by Atwood and Johnson.

As a result of these investigations it was found that teredo is able to adapt itself to live in waters containing but five parts of salt per thousand, whereas normal sea water has thirty-five parts. Teredo was thus able to invade the brackish waters of the upper bay and to survive flood seasons even when salt waters were available only at fortnightly intervals at the times of the mid and maximum tides. Salinities below five parts per thousand gradually kill the teredo if continued over a period of more than four weeks. These hardy borers are also able to survive in stagnant water in which the free oxygen has been reduced by the processes of decay. They are thus able to survive in sewage-laden waters as in Oakland Creek, Islais Creek and the mouths of sewers on the San Francisco water front, and to attack wooden structures even at the mouths of sewers.

It was also found that the breeding season began in mid-summer and the first larvae settled about July 15, settlement continuing well into December. Studies of Dr. Miller and Professor Dore reveal the fact that teredo not only eats the sawdust from its burrows, but digests the cellulose and hemicellulose, leaving only the lignin in the wood.

By extensive co-operation with the National Research Council's Committee on Marine Piling, and with the U. S. Lighthouse Board and the U. S. Navy, and various corporations on the Pacific Coast from Panama to Alaska and in Hawaii and Samoa, the distribution of various species of marine borers which attack marine structures in Pacific waters has been mapped out. The relation of teredo and other molluscan and crustacean borers which destroy wood immersed in sea water, to the various devices for the protection of wood from their attack has been carried on under the supervision of this committee at a number of stations of varying salinities in San Francisco Bay. By this method it has been possible to test out in cooperation with the chemical committee under the direction of Professor Burd, quite a variety of commercial methods of wood protection and of creosote. It has also been possible to test the reaction of these borers to varying fractional distillates from creasote. As a result of this work it has been found that creosote even in its various commercial forms offers the best available protection for wood against the attacks of these borers. It has also been possible to make suggestions of value to those contemplating temporary or per-

manent wooden structures in San Francisco Bay and adjacent waters as to the necessity and the best methods for protecting investments in this locality.

The loss in 1920 was estimated by competent engineers to approach $15,000,000. As a result of the work of the San Francisco Bay Marine Piling Committee and its many collaborators, the industrial communities of this coast are now informed as to the nature of the danger which this new invader of our coast, teredo navalis, has brought to investments in brackish waters and as to the best available means of protection of marine structures. This is one of the many ways in which the University is able through its scientific personnel to be of practical assistance in the safeguarding of the industrial development of this coast.

* * * *

The Mechanical Equipment of Office Buildings

UNDER the above caption Clyde R. Place, consulting engineer of New York, discusses in the Architectural Forum the system of heating now almost universally adopted in modern office buildings:

"The general heating system now adopted is the two-pipe, low pressure vacuum system with the radiators placed under the windows, either on legs or brackets. The adoption of such a system has resulted because of the quickness and effectiveness of the steam circulation, the smallness of its pipes and its quietness.

"The steam supply for these radiators comes from a main supply loop in the basement or in one of the upper stories. In the former case the steam is fed up and in the latter case the steam is fed down. The down-feed system may be used to advantage when the lower section of the building is used exclusively for banking space or stores requiring heat at different periods than the office portion. For this section a separate and independent up-feed system is used, and this does not necessitate the heating of the entire building to accommodate the store or bank portion. If the building covers a large area, over 200 by 200 feet, often the heating mains are sectionalized to apportion the heat and not to necessitate shutting down the entire building for repairs.

"In special finished spaces, such as banking rooms, private offices, and the like, the radiators are generally provided with grill enclosures. Where exceptionally high winds are encountered the down drafts from windows must be considered and eliminated or moderated by special adaptation of baffles and radiation.

"The heating of interior corridors is not found necessary unless ends of corridors terminate with windows at exterior walls; but for entrance vestibules ample radiation properly placed must be installed to care fully for the heavy inrush of cold air when entrance doors are being opened.

"All large mains and enclosed piping are covered; radiator branches and exposed risers are not covered. The tendency nowadays is to use welded nozzles on the large steam mains so as to do away with the numerous joints and extra fittings, and thereby decrease the possibility of future leaks.

"The selection of either coal or oil for fuel cannot be made a hard and fast rule. Degrees of availability, insurance and continuous supply, comparative costs, amount and locaton of storage and volume of combustion chambers, are all determining factors."

EMERGENCY REPAIR OF A CAST IRON WATER MAIN, LONG BEACH
Left to right top of page— Figs. 1 and 2; left to right bottom of page, Figs. 3 and 4.
For description see page 111, second column.

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Architect and Engineer
Incorporated
Founded 1905 by E. M. C. Whitney
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Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer, Inc.
PUBLICATION OFFICE:
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine.

Terms of Subscription
(Including postage) to all parts of the United States, $2.50 per annum; to Canada 75c additional; to all Foreign points $1 additional

Vol. 81 APRIL, 1925 No. 1

THE present-day requirements of all recognized schools of architecture, include a course in structural engineering which is second to none in any school of engineering, therefore the architect of today, who has acquired his degree of architecture in any of the recognized schools of learning, is presumed to be a well-qualified engineer as well as an architect.

WHY NOT RADIO LECTURES?

The Sacramento architects have organized a society to promote good fellowship and advance the interests of their profession. They have taken the initiative in a movement which ought to be encouraged by similar organizations throughout the country. We refer to radio lectures—short talks on Good Architecture and why it is advisable to employ an architect when a building is contemplated. The Sacramento Society has been in correspondence with the KGO station and the public may expect an announcement in the near future of a series of short talks dealing with the services of an architect in exchange for a client's money. Those who intend to build are generally inclined to take advice from a source which is unknown to them and which costs them nothing sooner than from their home-town architect, and still the home-town architect would eventually benefit thereby.

The problem that confronts the architectural profession today is how to educate the public into a keener understanding of the architect's value and the radio would seem to offer the solution, or rather, provide the best means of reaching the public. By telling the "listeners in" the advantages they will receive by employing a reputable architect, such as best results in utility of plans, beauty and savings in cost, the public is certain to form a more favorable opinion of the architect and the value of his services.

MORE FOREIGN CEMENT

The steamer "City of Victoria" has arrived in the Oakland harbor with a shipment of 50,000 sacks of cement from Belgium. This shipment is reported to be the largest received in the East Bay section. According to newspaper advices from Oakland "the cargo in the freighter is but part of the general movement of this material which has been coming into California in constantly increasing quantities from Belgium. The cement is brought across the Atlantic through the canal with its tolls and up the Pacific Coast to the local wharves and landed at a cost that is considerably less than that of the California produced material."—Daily Newspaper.

The next step in importations will lead to this question:

Should California building projects be planned and built by far away talent and labor, and with "long distance" material, simply because of a small reduction in cost?

With local enterprise thus smothered by poorly paid foreign labor, the inevitable decline of local prosperity is bound to cripple building construction. Giving preference to California cement will help to

maintain the full prosperity of California and its building industry.

The question arises: Is it good policy to accept foreign cement at its market value and not consider the vast amount of money and resources tied up in the domestic industry which for so long has served the American market faithfully and well?

IF an architect has completed a successful building, let him tell the world about it just as the contractor does.

THE ARCHITECT AND THE BUILDER

The architect is the medium of exchange between the man who wants a building and the man who builds. First of all, he must show the one, the kind and class of building desired, and the other a complete survey of what he is to build.

Changes from the original design will very often be made as the work proceeds—sometimes certain features must be added that were overlooked at the time the plans were drawn. This is to be expected as the architect is human and the ultimate owner wishes to pay for all he gets (or he should), and the builder wishes to give for all he receives (or he should), and the architect should see that they are both accommodated.

The architect does not always take the stand of impartial arbitrator as he should, but, on the other hand, very often acts to the extent of arbitrary agent for the owner only. In the view of common justice this is not the correct position! Justice in dealings between men should at all times be dealt out in full measure both ways, no more and no less, and in this instance the architect is the dealer.

Incidentally, the contract should be an impartial document with due respect to equal rights of both parties and so written that any man of average intelligence will understand its terms, and further, that there be no discrepancies between it and the plans and specifications. It is not only best, but the height of discretion, to give all necessary attention to this feature of the project, before proceeding any further in the premises.

Emergency Repair of a Cast Iron Water Main

By J. J. BRUTON

THE usual traffic was moving in the streets of Long Beach, California, and the usual routine of city government was being administered when a telephone call told of a leak in a water main. The water had broken through the pavement and was flooding nearby cellars.

The municipal city water department sent an emergency crew to investigate. The trouble was quickly located in a cast iron tee on the main pipe line that supplied the city with water. To stop the leak temporarily it was necessary to disconnect an 8 in. outlet and plug it with a large redwood block. This cut off the water supply in certain sections of the city and therefore made a permanent repair immediately necessary.

As soon as the waste water had cleared away, engineers visited the scene to ascertain what damage had been done and to decide on the quickest method of repairing the line. They had never attempted to repair water mains by the oxy-acetylene process, but due to the exceptionally large and costly tee involved they decided to call in a local welding company to advise whether or not it could be welded.

Oxweld equipment was brought to the scene and work started. The cutting blowpipe was used in beveling the two pieces to an angle of 45 degress, (see Fig. 1, Page 109). Then the broken piece was placed in position ready for welding, as shown in Fig. 2. Owing to the fact that oil burning preheating equipment was not available it was necessary to heat the casting with a welding torch. Furthermore, the position of the break required 100% vertical welding and this, in the confined space of the ditch, made the job a very difficult one. In spite of such obstacles the weld was successfully completed. Fig. 3 shows it in this stage while Fig. 4 was taken after service was resumed. Water was delivered to the community again only four hours after the break had occurred. Had the old method, that of replacing the 30 in. by 8 in. tee with a new one been resorted to, it would have meant a delay of 18 hours before turning on the water again, and entailed a cost greatly in excess of the $11.01 which covered all expenses of welding the break.

With the Architects

Building Reports and Personal Mention

Los Angeles City Hall

In the suit to restrain the Los Angeles city council from entering into a contract with Architects Curlett & Beelman to design the city hall to be erected in the Los Angeles civic center, Judge Shaw of the superior court sustained the demurrer of the city council. It was the contention of the plaintiff, Charles J. Casper, a taxpayer, that council had no authority to enter into such a contract, the charter providing that all contracts relating to building come under the jurisdiction of the board of public works. The court held that the petition did not cite sufficient authority of law to warrant the issuance of an injunction.

Addition to San Jose Bank

Architect G. A. Lansburgh, of San Francisco, is preparing plans for an addition to the Old Garden City Bank building, now owned by the Mercantile Trust Company of California, at First and San Fernando streets, San Jose, at an approximate cost of $120,000.

The Bank of Italy has announced its intention of building a twelve-story Class A bank and office building in San Jose, to replace the antiquated structure which it now occupies at First and Santa Clara streets, San Jose.

Architects Achieve Success

The firm of Marston, Van Pelt and Maybury, whose architectural works are well known in Southern California, have been awarded first prize in the House Beautiful Small Homes contest recently closed and which drew entries from architects throughout the country. The first prize award carried a cash consideration of $1000.

The magazine contest prize was awarded to Marston, Van Pelt and Maybury for their work in designing the home of Mr. George Hunt, 2273 Parkview avenue, Pasadena.

Fresno Church

The Trinity Methodist Episcopal church is to build a $100,000 edifice of brick and terra cotta at Van Ness and University avenues, Fresno, from plans by Architects Tuttle & Tuttle, 363 17th street, Oakland.

The Trinity Methodist church of Berkeley is also planning to build a new home, estimated to cost $350,000, and for which George Rushforth is the architect. Mr. Rushforth will shortly move into his new home which he is building in North Berkeley.

Architect Sues Labor Union

Suit has been filed in the Alameda county Superior Court by Architect William J. Wilkinson against the Oakland Labor Temple Association, demanding $48,000 alleged to be due him for services in preparing plans and specifications for the proposed labor temple at Eleventh and Franklin streets, Oakland.

Architect Wilkinson declares he was to receive 10 per cent of the cost of the building, and that if the project was abandoned, he was to be given three-fifths of the agreed fee. He says he first prepared plans for a structure to cost $450,000, which the association later abandoned. His fee for this work, he asserts, was to be $27,000. Later he drew plans for a building to cost $300,000. This plan was also abandoned, he said, and his fee for this work amounted to $21,000. He asks the court to grant judgment in his favor for the total amount, $48,000.

Electrical Laboratory

Engineer C. H. Snyder, 251 Kearny street, San Francisco, has completed the engineering plans for a structural steel and corrugated iron laboratory for Stanford University, Palo Alto. Bakewell & Brown, are the architects. The engineering plans are unique on account of the immense size of the steel rolling doors, and the method adopted for their support. The building will be approximately 60 feet high. There will be 225 tons of structural steel required.

$500,000 Garage

A four-story reinforced concrete garage, designed for six additional floors, is to be erected on Fourth street, opposite the Argonaut Hotel, San Francisco, by Mr. Harry Lesser and associates. The garage will accommodate 1000 cars and the ramp system will probably be used. Later on, the front portion of the lot will be covered with a fourteen-story hotel. Messrs. Ashley & Evers are the architects.

Contract for Theatre

The New Pantages theatre at Market, Hyde and Grove streets, San Francisco, will be built by R. McLeran & Company, Hearst building, San Francisco, from plans by Architect E. Marcus Priteca. Structure will seat 2500 persons and the front portion will contain stores and offices. Estimated cost is $1,000,000.

Atelier Hirons Coast-to-Coast Traveling Exhibition

THE "Traveling Exhibition," consisting of Atelier work and Paris Prize "projets rendu," is off to a flying start. After numberless hitches and delays the regular itinerary has commenced, as indicated below, subject to one or two possible deflections and corrections.

Feb. 11—Princeton University, (N. J.)

Feb. 11-21—Syracuse University, (N. Y.)

Feb. 21-28—Atelier Rectagon, (Buffalo, N. Y.)

March 1-11—Penn State College, (Pa.)

March 11-18—Geo. Washington University, (Washington, D. C.)

March 18-25 — Howard University, (Washington, D. C.)

March 25-April 4—Alabama Polytechnic Institute, (Auburn, Ala.)

April 4-14—No. Carolina State University, (Raleigh, N. C.)

April 14-24 — Ohio State University, (Columbus, O.)

April 24-May 3—University of Illinois, (Urbana, Ill.)

May 3-13 — University of Kansas, (Lawrence, Kansas.)

May 13-23—Atelier Denver, (Denver, Colo.)

May 23-June 2—Montana State College, (Bozeman, Mont.)

June 2-12—State College, Washington, (Pullman, Wash.)

June 12-22—University of Washington, (Seattle, Wash.)

June 22—Allied Architectural Club of Los Angeles, (Calif.)

The exhibition is made possible through the efforts of the Atelier Hirons and the generous co-operation of Messrs. de Ghetto, Thomas and Euston in loaning their drawings. Each school is under obligation to forward the collection on the proper date prepaid to the next stopping point, but that is the only expense involved.

Residence Bids Opened

Bids have been opened and are under consideration for a $15,000 residence to be erected on Cedar street, Berkeley, for Miss Mary C. Alexander, from plans by Architect C. W. Dickey, of Oakland. Mr. Dickey is now in Honolulu attending to some prospective work in the Hawaiian Islands.

Contracts for Apartment House

Architect August G. Headman, Call building, San Francisco, has recently completed plans and awarded contracts for a three-story frame apartment house to be erected at California street, west of Hyde, San Francisco, at a cost of $40,000. Mr. Headman at present is preparing plans for extensions and alterations to Marquard's Cafe at the corner of Geary and Mason streets, San Francisco.

Oakland Apartment House

Architect B. G. McDougall, of San Francisco, has prepared preliminary plans for a two-story frame and stucco store and apartment house to be built in the Borax Smith Tract, Oakland. There will be ten stores and twenty-four apartments. The estimated cost is $96,000.

Architect to Build Market

Architect C. O. Clausen, Hearst building, San Francisco, has purchased the property on the northeast corner of Cole street and Parnassus avenue, San Francisco, and will immediately start construction of a market building to cost $25,000. The type of architecture will be Spanish.

Architects for Oakland Schools

The following architects have been named to design new school buildings in Oakland:

Alexander Hamilton, Washington Miller, San Francisco; Crocker Highlands, Wythe, Blaine & Olson, Oakland; Prescott Annex, William Mooser, San Francisco; Garfield, Miller & Warnecke, Oakland; Webster Addition, Chas. W. McCall, Oakland.

Architect Opens Office

Thomas Kent, who for sometime has been at the head of the drafting department in the office of Architect Lewis P. Hobart, Crocker building, San Francisco, has opened an office for the practice of architecture in the Underwood building, 525 Market street, San Francisco. Mr. Kent has quite a little work in view and would be pleased to receive trade literature and catalogues.

Parochial School

Plans are being prepared by Architect George E. McCrea, 369 Pine street, San Francisco, for a two-story and basement reinforced concrete parochial school for St. Catherine's Parish, Burlingame. There will be nine rooms and an assembly hall. Estimated cost is $80,000.

Addition to Berkeley Bank

Architect James W. Plachek, of Berkeley, is preparing plans for an addition to the First National Bank, Berkeley. The present banking quarters will be extended to the adjoining building, which was recently purchased by the bank.

Personal

Architect Saul Brown announces the removal of his offices from the Union League building to the Lincoln building, Los Angeles.

Architect Rudolph Falkenrath announces the removal of his office from the Detwiler building to suite 611, Chamber of Commerce building, Los Angeles.

Mr. Aleck Curlett of the architectural firm of Curlett & Beelman has been elected a director of the Union Bank and Trust Co. of Los Angeles, to succeed Dr. G. del Amo, resigned. Curlett & Beelman were the architects for the Union Bank building.

Architect Benj. Bloser announces the removal of his office from Consolidated building to 442 Citizens National Bank building, Los Angeles.

Architect William Bruce announces the removal of his office from room 430 to suite 515 in the Chapman building, Los Angeles.

Architect L. E. Korn and Mr. A. C. Le Brun, C. E., have formed a partnership under the firm name Korn & Le Brun, with offices in the Financial Central building, Seventh and Spring streets, Los Angeles.

Architect Arlos R. Sedgley has opened offices at 429 A. G. Bartlett building, Los Angeles, for the general practice of architecture with Roland D. Putnam as associate.

Architect George Birnbach, formerly with Architects Edelman & Barnett, is now located at 609½ North Western avenue, Los Angeles.

Architect Rudolph Falkenrath announces the removal of his offices from 202 Detwiler building to suite 611 Chamber of Commerce building, Los Angeles.

Architect Robert D. Mac Pherson has moved from 452 South Burlington avenue to 1107 Hibernian building, Los Angeles.

Architects N. Marcus Priteca and Frederick J. Peters, have formed a partnership to be known as Priteca & Peters, associated architects. With them will be Mr. R. M. Lewis, mechanical engineer. Offices of the new firm will be in the Pantages building, Seattle and Los Angeles.

Architect Harry Hayden Whiteley has moved to his new studio at 320 Madison avenue, Culver City.

Architects John C. Austin and Frederic M. Ashley have moved their offices to 609 Chamber of Commerce building at 12th street and Broadway, Los Angeles.

WANTED—Heating, electrical, structural engineer, or architect, to share offices with architects. Apply Room 618, Alameda County Title Insurance Company's building, 1404 Franklin street, Oakland. Phone Oakland 4955.

Hutchison & Mills Busy

New work in the office of Architects Hutchison & Mills, 1214 Webster street, Oakland, includes a $15,000 apartment house on Broadway, north of Mather street, Oakland, for Mr. and Mrs. Panesian; frame flat building in North Oakland, for W. T. Vaughn and one-story reinforced concrete store building on Grove street, near Rose, Oakland, for Messrs. F. E. Romie and Leslie R. Wilson.

Six-Story Hotel

Plans have been completed by Architect Edward Glass, 525 Market street, San Francisco, for a six-story steel and brick hotel to be built on the south side of Geary street, between Leavenworth and Hyde streets, San Francisco, at a cost of $150,000. The hotel will have approximately sixty rooms, all with baths.

Summer Resort Additions

Architect S. Heiman, 57 Post street, San Francisco, has prepared plans for extensive alterations and additions at Boyes Hot Springs, including a moving picture theatre, dancing pavilion and glass roof to be constructed over the swimming tank. Next year, a new hotel costing $150,000 will be erected.

Architect to Build Home

Architect Irving F. Morrow, of Morrow & Garren, has prepared plans for a Spanish type home which he will build this summer in Piedmont. His partner, Mr. Garren, has already started a home for himself in the same locality.

Brick Veneer Apartment

A three-story frame and brick veneer apartment house with stores on the ground floor will be built on Seventeenth street, near Castro, San Francisco, from plans by Architects Kuhn & Edwards, Commercial building, San Francisco.

Residence Apartments

Architect R. R. Irvine, Call building, San Francisco, has designed a three-story frame and stucco apartment house for Mrs. Theodore De Pass to be built on the northeast corner of Ocean avenue and Granada street, San Francisco, at a cost of $30,000.

More Certified Architects

The following architects have been granted certificates by the State Board of Architecture, Southern Division: Charles Krugel, 537 Spreckels building, San Diego; Allan M. Jeffers, 541 San Juan avenue, Venice; Verner B. McClurg, 2822 San Marino street; Park M. French, 2206 Holly Drive; Frederick Scholer, 228 Higgins building and Roscoe L. Warren, 324 O. T. Johnson building, all of Los Angeles.

COMMUNICATIONS

DECISION AFFECTS ARTIFICIAL TRAVERTIN

Editor, The Architect and Engineer,
San Francisco, Calif.

Sir:—This is to advise you that the Federal Court has again awarded a decision in our favor in connection with the alleged infringement of the Deneville patent on artificial travertin.

The many architects, owners, builders and the plastering fraternity in general, will no doubt be pleased to learn that this patent has been declared invalid and of no force and effect.

This decision will enable any architect, owner or builder to specify artificial travertin so that it may be bid on in open competition without recourse to royalties or premiums by reason of their desire to use this character of work in any of their proposed buildings in the future.

We believe that this is a subject matter which should be published in your magazine so that the public in general may be advised.

Very truly yours,
MacGRUER & SIMPSON.
By G. S. MacGRUER.

Editor's Note—The entire case hinged on the question of whether or not the use of imitation travertin in the Pennsylvania station was an experiment or not. If its installation was not an experiment, but a regular business transaction, then the patent would be invalid because application for it was not made until more than two years after the work was finished.

The evidence showed that Messrs. McKim, Meade & White were the architects who designed and supervised the construction of the Pennsylvania station and that the George A. Fuller Construction Company was the general contractor for the building. The company of Paul E. Denivelle, the alleged inventor of the artificial travertin process, was retained as sub-contractor to install the imitation travertin, which is the material covering portions of the interior of the station. The entire work was to be completed to the satisfaction of the architect.

The Denivelle contract was executed March 5, 1909, and on November 29, 1910, the Denivelle Company executed an acknowledgment that it had received from the contractor the sum of $125,741.03 in full payment of all moneys due or to become due in connection with the contract.

The wall surfacing of the buildings of the Panama-Pacific International Exposition in San Francisco was also of imitation travertin stone, installed under the personal supervision of Denivelle, the patentee. The material has proved so attractive and durable that it has been used in buildings in all parts of the United States. The present suit was brought by Denivelle, the patentee, against McGruer & Simpson, contractors, for their use of the imitation travertin stone in the construction of the palatial Biltmore Hotel in Los Angeles.

On October 20, 1915, Denivelle applied for his patent, and the patent was issued to him on January 16, 1917. This patent is annulled by the court's decision. Judge Morrow saying on behalf of his colleagues, Judges Hunt and Gilbert:

"We conclude that the patent is invalid for the reason that more than two years prior to plaintiff's application for the patent he had placed the process and product of the invention on sale and had sold both the process and the product to the Pennsylvania Tunnel and Terminal Railroad Company for a profit."

ARCHITECTS OF LOS ANGELES BUILDING

Los Angeles, March 25, 1925.

Editor The Architect and Engineer,
San Francisco, California.

Sir:—In going through the March issue of The Architect and Engineer, we note on Page 61, an illustration of the Westinghouse Electric and Manufacturing Building in Los Angeles, as being titled, "Building for the Westinghouse Electric and Manufacturing Company, Emeryville, B. H. Prack, architect." We desire toadvise this building is located in Los Angeles and was designed by us and we wish that you would make the necessary announcement and correction of same..

Yours truly,
NOERENBERG & JOHNSON.
By H. S. JOHNSON.

Editor's note—The photographs of the several Westinghouse plants were furnished by the same party and through a misunderstanding the designing of all of them was credited to Architect B. H. Prack. We regret the mistake and are glad to give Messrs. Noerenberg & Johnson the credit of designing the Los Angeles plant.

LET'S BLAME THE PRINTER

San Francisco, March 26, 1925.

Editor The Architect and Engineer,
San Francisco, Calif.

Sir:—We are writing to thank you for copy of The Architect and Engineer for March, 1925, showing mention of Monel Metal Bulletin on Page 119.

In this connection however, we note that you have coined a word which we cannot even find in a cross word puzzle book and that is going some. This word seems to be spelt "subaervous"; we suspect that this may be a combination of French and Latin, meaning perfect, or incomparable, but it is curiosity on our part to find out if this Latin or French synonym is a product of the Editorial Department or the Printing Department. With best regards, I am

Very truly yours,
EDW. J. FOWLER.
Pres. Pacific Foundry Company.

THEY LIKE SPANISH ARCHITECTURE

New York, March 23, 1925.

Editor The Architect and Engineer,
San Francisco, Calif.

Sir:—Having received a copy of your Pebble Beach issue, I showed it to an architect friend with pride, as I am going to build my home there next fall. Nothing would do said architect but to annex my copy.

I enclose fifty cents in stamps for which mail to John Van Wart, 347 Madison Ave., New York City, a copy of your February issue (Pebble Beach number).

Undoubtedly you will be able to induce him to subscribe to your magazine for he is much impressed with it. The firm name is Van Wart & Wein. Sincerely, FRANK SHERIDAN.

Editor's note—It may be of interest to our readers to know that many Eastern architects have become intensely interested in the Spanish type of architecture as interpreted by our California architects. In less than two years more than forty subscriptions to The Architect and Engineer have been received from architects and designers in the state of Florida alone.

Construction Projects Abroad

Contributed by U. S. Department of Commerce, Washington

CITY OF COLOGNE HOUSING

By a new plan adopted by the city administration of Cologne, the shortage of living quarters in the city of Cologne, is expected to be eliminated within five years, Consul Morris, Cologne, advises the Department of Commerce. The total need of flats is estimated at 21,000. Within the present fiscal year, it is intended to provide 3000 new apartments.

TWO COLLEGE BUILDINGS

According to the Director of the Colegio Internacional, Asuncion, Paraguay, work on the construction of two new college buildings is to commence. The interior fixtures will include 500 combination school desks, 250 chairs, electric light fixtures and general school equipment.

WIRELESS STATION

The government of Southern Rhodesia has definitely decided to go ahead with the scheme for a wireless station just outside Salisbury, Consul Donald, Johannesburg, informs the Department of Commerce. The sum of £12,000 has been set aside under the loan estimates to cover the cost, and tenders will be called for in a few months.

MACADAMIZED HIGHWAY

The Ministry of Public Works has presented to the President of the republic a decree authorizing the expenditure of $26,631 m/n, on preliminary surveys for a macadamized highway to join up the capital and the city of Cordoba, via the city of Rosario, the American Embassy at Buenos Aires informs the Department of Commerce. According to preliminary estimates, the cost of the highway between Buenos Aires and Rosario, a distance of 246 kilometers, would be $12,336,000 and the estimated cost of the road between Rosario and Cordoba, a distance of 386 kilometers, would be $13,338,000 m/n.

Unlicensed Architect Loses Fee

That an architect who does not hold a state license cannot hold his client responsible for fees is the judgment of the state supreme court, which recently upheld the decision of the Pierce county court in the case of Fred Travis, Tacoma. Travis designed a Tacoma apartment house and then assigned his assets to Edward M. Sherwood. The latter endeavored to force Travis' client to pay the architect's fee for designing the apartment.

Class A Medical Building

Dr. W. Patton Wilson is to construct an eight-story Class A office building for physicians and dentists at Pine and Eighth streets, Long Beach. Plans have been prepared by Architects Dedrick & Bobbe, Laughlin building, Los Angeles.

Branch Bank Building

Architect Edward T. Foulkes is preparing plans for a reinforced concrete branch bank building to be built at 40th street and San Pablo avenue, Oakland, for the Emeryville Branch of the American Bank.

Arnold W. Brunner

Mr. Arnold W. Brunner died of pneumonia at his home, 1 Lexington avenue, New York, on February 14th. Mr. Brunner was born in New York, September 25, 1857, and was educated at the public schools here and in Manchester, England. From 1877 to 1879 he studied at the Massachusetts Institute of Technology and for many years had practiced architecture in New York City.

The large number of Mr. Brunner's works were of a public character, or of semi-public character, institutions, colleges and hospitals, including the Stadium of the College of the City of New York, the School of Mines at Columbia University, Mt. Sinai Hospital, both the original group and more recent buildings and the Jewish Maternity Hospital at 108th street and Fifth avenue, New York.

Passing of John C. Proctor

Formerly state architect of Washington, designer of the present state capitol building at Olympia, of the distinctive Pierce County, Washington, courthouse, and many other important buildings. Architect John C. Proctor, 71, died at his home at Puyallup recetly. An aggressive pioneer in the architectural field in the West, he was well known to all the older architects and contractors of the Pacific Northwest.

New Member of Firm

Architect E. L. Bruner has recently been made a member of the firm of Hamm & Grant, Inc., architects and engineers, engaged in the design and erection of commercial and industrial buildings throughout Southern California. Mr. Bruner was formerly structural designer for the California State Harbor Commission, and more recently chief structural designer for the Spreckels Sugar Co., San Francisco.

Oakland Business Building

Architects Reed & Corlett, of Oakland, are preparing plans for a three-story brick building to be erected on the southeast corner of Tenth and Broadway, Oakland, for Mr. W. W. Wicker. Cost is estimated at $100,000.

To Build Spanish Home

Plans are being prepared by J. C. Tate, 5691 Vicente street, Oakland, for a Spanish type home for Mr. Chas. R. Tate of Oakland. Mr. J. C. Tate will also build a Spanish home for himself in Rockridge, Oakland.

Opens San Francisco Office

Architect F. J. De Longchamps of Reno, Nevada, has opened San Francisco offices in the Underwood building. Mr. De Longchamps has over $1,000,000 in new work on the boards.

Roof and Waterproofing Problems

Some Fundamentals in Waterproofing

By J. I. HOLDER, Director of Engineering Department
of The Paraffine Companies, Inc.

THE terms "Waterproofing" and "Dampproofing" are sometimes confused. The word "Dampproofing" is frequently used as it applies to keeping out moisture above ground level, and is taken care of in various ways through the use of building papers, coated with asphaltum; or, above ground, a dampproofing compound applied against brick or concrete walls on the inside and plaster applied directly over the dampproofing; or, below ground level where there may be some moisture to contend with, but no real water pressure, in which case a dampproofing compound is sometimes used or a mopping of asphalt. Waterproofing in its strictest definition is a system of method of excluding water —not merely moisture or seepage. As the term "Waterproofing" is usually used, it refers to exclusion of water from basements, pits, subways or the impounding of water without leakage in reservoirs, swimming pools, etc. It is also frequently used in bridge construction work, and also applies to steel pipes, flumes, culverts and similar construction, with which this article does not deal.

There are three methods of waterproofing usually employed, and these three methods are known as the integral system, the plaster bond system and the membrane system.

The integral system of waterproofing has been successful in some cases, but it is the experience of the writer that it cannot be depended upon for positive results against exclusion of water. It may be true that the incorporation of hydrated lime, or a prepared compound of similar nature into the concrete mixture, will produce, if it is accurately and carefully done, a waterproof concrete. The two objections which have frequently been brought out in engineering papers on the subject against this method are, first, that the concrete is susceptible to cracking or checking, allowing the seepage of water through it, and consequent moisture or leakage. The second objection is that it is claimed by many engineers, that the concrete is weakened by the incorporation of hydrated lime or a prepared compound similar in nature. Of course where a wall is unusually thick, say three feet in thickness, the danger from cracking or fracture is minimized.

The plaster bond system has also been successful in some cases, particularly where there is ground seepage to be contended with, and where there is no great head of water pressure. The plaster bond method is usually one composed of a prepared compound incorporated in Portland cement under a definite formula, and applied in a plastic condition. This method is considered faulty by many engineers as the plaster bond is susceptible to cracking or chipping, and thus permits the inclusion of water or moisture.

The membrane system, to my mind, is the most positive method of waterproofing. It may be definite as a given number of alternate layers of fabric or roofing material and bitumen (waterproofing asphalt). For ordinary protection, three layers of Dampcourse and four layers of asphalt provides a good membrane against a small head of water. The factor of safety against leakage is increased by the use of additional layers of Dampcourse and asphalt in proportion to the increased head of water to be excluded and the importance of the work. If the membrane is properly done with the right grade of materials, water and moisture is excluded permanently for just as long as the reinforced masonry holds together, which may be hundreds of years. A good waterproofing membrane has been known to bridge cracks or fractures in the masonry a quarter inch wide, and still exclude all water, even under as high a water pressure as four to five feet. In the excavations for subway and tunnel work in and around New York City, particularly on the present site of the Grand Central Terminal and the Pennsylvania Terminal, the waterproofing membrane unearthed at these places was in perfect condition after forty years of service. Chemical analysis showed them to be exactly similar in characteristics to the present materials employed. It is very rare indeed where membrane waterproofing results in failure.

Some of the salient or fundamental points in the exclusion of water by the membrane system are as follows:

First—The membrane must always be placed on the water pressure side of the mass of masonry. As an example, the treatment for a basement would require the construction of a curtain or retaining wall for vertical surfaces and a concrete base of three or four inches for horizontal surfaces, to receive the waterproofing. The membrane is then applied in successive courses or layers, ranging from three to five plies, or layers, solidly mopped between with asphalt, the number of layers depending upon the factor of safety against leakage desired, and the head of water to be excluded. The reinforced concrete is then poured, and there must always be sufficient weight of concrete to withstand the maximum head of water.

Second—The membrane waterproofing should always be protected with a cement grout before the reinforced concrete is poured.

Third—It has been found that the most economical and foolproof material to use in a dampcourse of approximately 20 lbs., per hundred square feet, using the highest grade material that it is possible to obtain. This is likened unto a half ply high-grade roofing which is waterproof in itself. It is much better material to use than ordinary saturated felt which is not waterproof in itself.

Fourth—One of the principal mistakes that is frequently made in waterproofing by the membrane system is the asphalt used—particularly the grade and quality, which is all too often too hard and brittle. A soft, ductile asphalt is necessary, one that has a penetration of approximately 35 and a melting point of not more than 133. A melting point of 120 to 125 is better.

Again, the writer wishes to emphasize the necessity of the proper grade asphalt, and that it must be of low melting point, for it must be remembered that this asphalt must be ductile and pliable under sub-normal temperature, so that there is enough flexibility to it, so that one sheet can move over the other sheet without fracture.

In order that the readers of The Architect and Engineer may have a clearer conception of the methods employed in connection with the membrane system, the following is an outline for waterproofing basements and pits.

First, the concrete surface shall be smooth and dry. Second, at all wall angles and corners there shall be first applied a 12 inch wide strip of dampcourse, firmly set in hot asphalt to act as a reinforcement; these 12 inch wide sheets to be back mopped with asphalt, and the concrete surface mopped so that a perfect bond is obtained, and so that the dampcourse does not touch the concrete in any place.

Third, apply a heavy coating of asphalt to the entire concrete surface, and while hot, imbed in it one layer of dampcourse, lapping the sheets two inches. The back of each sheet of dampcourse shall be mopped with asphalt, so as to insure a perfect bond.

Fourth, three more heavy coatings of hot asphalt and three more layers of dampcourse shall be applied as described in the preceding paragraph, until there are four layers of dampcourse mopped solidly together with asphalt.

Fifth, the method of application of the dampcourse shall be that two layers of dampcourse shall first be laid over the horizontal surfaces and carried up vertical surfaces six inches. Over the vertical surfaces shall then be applied two layers of the dampcourse, which shall be brought down over the upturned material to the horizontal surfaces. All horizontal surfaces shall then be treated with two more layers of dampcourse in the same manner as hereinbefore described, and the vertical surfaces shall also be treated with two more layers of dampcourse.

Sixth, all end laps or connections shall be of not less than six inches wide. All connections shall be left unmopped so that interlacing of adjoining sheets may be perfectly bonded together.

Seventh, each sheet shall be laid free from pockets, blisters or wrinkles. Each sheet shall be bonded perfectly one to another.

Eighth, over the entire membrane apply a flood coating of hot asphalt, using approximately 40 lbs. to the 100 square feet.

Ninth, as soon as the flood coating of asphalt is applied, there shall be a protective coating of cement grout applied over the horizontal surfaces.

Tenth, the work should always be done under the supervision of an inspector, furnished by the manufacturer of materials, for waterproofing is one of the few things that, unless it is 100% perfect, it is of little or no value, and the manufacturer is, in nearly all cases where jobs are accessible, ready and willing to co-operate towards seeing that this material is properly applied.

Finally, it must be borne in mind that each job of waterproofing is a problem in itself and requires special study and planning. The nature of the soil, the head of water to be excluded, the character of the building, the factor of safety against leakage and many other elements enter into the proper and suitable preparation of a specification covering the work. The writer extends to the readers of The Architect and Engineer his sincere desire to serve them in all such matters, to which he will give his personal attention and study.

House Number

The ARCHITECT & ENGINEER

MAY 1925

Published in San Francisco
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Published Monthly by
THE ARCHITECT and ENGINEER Inc.
626-627 Foxcroft Building-San Francisco
W. J. L. Kierulff, President
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HOME OF MRS. G. ALBERT LANSBURGH, SAN FRANCISCO
G. ALBERT LANSBURGH, ARCHITECT

Frontispiece
The Architect and Engineer
May, 1925

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THE
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MAY
1925

VOL. LXXXI
No. 2

House Architecture

By IRVING F. MORROW*

WHEN you consider public architecture you are in the realm of group psychology—if I wished to convey the slightly invidious suggestion which, from a certain point of view, I believe is not amiss, I might have said mass psychology. For public buildings are, by and large, examples of mass thinking. Monumentality, archaeological and archtectonic achievement of a high order, real impressiveness and even grandeur, are amply in evidence. But it is not the place to look, ordinarily, for genuine personality—which is after all the breath of life. In moments of social stress, e.g., in war time, public life does not evoke individuality in conduct; if such crops out it is ruthlessly suppressed. The same spirit of conformity seems always to be an incubus on public architecture. The competition has doubtless much to answer for in fostering this tendency. But apart from its influence, people seem afraid to think personally in designing public buildings. It is regarded as undignified and subversive of expectation. Besides, in the conduct of everybody's business, whose personality shall be manifested? Since that is a difficult question to answer in a dogmatic fashion, we shall exclude everybody's.

In semi-public architecture the situation is a little less rigid. Designers seem to feel that so long as certain fundamentals of conformity have been complied with, their personalities may be permitted to obtrude. Yet even here there is only a limited, and often a specious freedom; because, for all their erection by private clients, such clients are often corporate rather than individuals, and their buildings generally depend in one way or another on public patronage.

It seems therefore that not till we enter the realm of domestic architecture do we come upon a truly personal architectural psychology. I do not fail to appreciate the extent to which the impulse to conformity operates even here. Mrs. A must have her house thus and so because

*Member of firm of Morrow & Garren, Architects.

all her friends have it, or because "they are doing it now". I admit that this is not exactly defiance of convention. But it is at least a personal opinion, albeit a limited and unimaginative one, rather than an impersonal, and hence intangible necessity. And did I say "Mrs. A"? I did injustice. For experience fails to reveal in Mr. A much more intelligent independence. Generally he only rationalizes his prejudices (the same prejudices) more plausibly.

These considerations must always have held to some degree. We imagine architecture as the revealer of past epochs, but we are prone

HOUSE OF MR. WILLIAM S. HART, SACRAMENTO, CALIFORNIA
Dean & Dean, Architects

to go to the outstanding masterpieces for the revelation, rather than to the homes where people lived. As for those periods from which no relics of domestic architecture, or only scanty ones, remain, there is at least the grave possibility that our interpretation based upon temples and public works may be not a little one-sided and misleading. What insight, what intuition, what psycho-analytical experience, could be expected to deduce Mr. George F. Babbitt from the Lincoln Memorial?

Houses, then, are our truly personal architectural manifestations. Not only is a man's house an index of his own personality, but the sum

total of a community's houses bespeaks its kind of people more authentically than its city halls, churches, banks, hotels, theatres, and the like. In these structures people build as they think other people expect them to build. When they are uninteresting it is because courage is lacking to go ahead and be interesting. People's houses are built as they wish them built. If they are stupid or servile it is because they lead stupid or servile lives.

Look, for instance, over the field of current architecture in California. Throughout its hundreds of miles of length communities erect

HOUSE OF DR. CHARLES B. GRIGGS, OROVILLE, CALIFORNIA
Dean & Dean, Architects

public buildings in the manner of Rome, the High Italian Renaissance, and the French Renaissance; not, I believe, through any conviction, but because they consider that thus public buildings "are done". When they build their houses—and I now limit my consideration to people of culture and intelligence—when they build their houses it occurs to very few of them to employ these same formal styles. A composite picture of their houses presents an aspect in no wise suggestive of the buildings erected in their public capacity. That the architecture of an epoch must show differences in degree of scale and formality will be admitted; but

it should manifest spiritual consistency. When different classes of building reveal a distinct spiritual dualism, I am inclined to believe that at least one of them must be wrong; i. e., insincere.

Perhaps neither domestic nor public architecture today achieves that simple, earnest sincerity which marks significant styles; but between the two it seems evident that the expression of current home work is more in accord with the real outlook of ordinary men than that of public architecture. People build — I am still speaking of those who build intelligently — people build as they want to live. Their public architecture, which they use but casually and occasionally, reflects a sort of vicarious glory; it is on a more artificial plane.

If one thus takes California's current domestic architecture as indicative of the character of its life, the most prominent quality which emerges is a genial informality. Rigidity of either plan or elevational

ENGINE HOUSE NO. 1, SACRAMENTO FIRE DEPARTMENT
Dean & Dean, Architects

treatment is not typical. And this is true from whatever historical source the work is derivative—for it is understood that there is today no psychologically obligatory style in the traditional sense of an architectural or decorative system. There is considerable variety in expression. Most of the work is related to the more picturesque (i. e., unexhausted) styles of the past; and of these the most prevalent are the country and peasant types of England and Spain. Spanish architecture of the more or less unsophisticated type is indeed becoming increasingly prominent as the basis not only of domestic work in California, but of the smaller commercial and semi-public building as well. I have frequently enlarged on the importance of this development—its historical and its picturesque appropriateness. Yet there is a vein of English

tradition which is not negligible; and it is significant that architects are beginning to bring this into harmony with the requirements of the California landscape.

Much of Mr. Gutterson's work is a case in point; as, for instance, the Jamison house here shown. This is harmonious with its surroundings and with the spirit of the California home in general. In particular is the interior of the large room at once ample and generous, and domestic.

In speaking of work influenced by the English tradition I included, tacitly, the so-called New England farmhouse type as well. I did so because this work is itself in the line of English descent; but perhaps it is a mistake to think of this under the heading of the parent stock. It has acquired so specific an individuality of its own that it is justified

ENGINE HOUSE NO. 8, SACRAMENTO FIRE DEPARTMENT
Dean & Dean, Architects

in insisting on its own name. This type of work has been used only to a small extent in California work, but with rather conspicuous success. There is something at once rural and American in it that, with a proper feeling for climatic and social differences, makes it amenable to local use. I am speaking, not of the architecture commonly denoted as "Colonial", which is quite English in feeling, and as far as I know has never been adapted to use in California with what I should call unqualified success; but of the country, farmhouse type of the New England states. The feeling of this work has in the past found expression, quite without conscious intention, no doubt, in the utilitarian farm buildings — barns, stables, etc., of the California valleys. Here the farmer satisfied his building needs in the simplest and most direct fashion, often with the happiest of results. As you pass along the

valley roads, viewing some of these buildings afar against the hills or on the open plains, they form veritable masterpieces of informal group composition. It is only when you come near enough to single out the farmer's home that you realize how largely this happy result is the outcome of unconscious, even unsuspecting necessity, and on how insubstantial a foundation of plastic instinct and knowledge it rests.

Of recent years trained designers have begun to explore the possibilities of this style. It possesses obvious advantages—simplicity of mass, incidental detail; and—not lightly to be considered—it is specifically a wood architecture, and most of our ordinary building is of wood. I have not seen better examples of this type of work than Messrs. Dean and Dean have given in the Meek and Leonard houses at Oroville and the Golf Club House at Sacramento. These are all real compositions—well studied masses, varied and picturesque details, logically and beautifully used materials. Plaster seems to be the finish material of the day; inclination and circumstance have combined to make me more or less

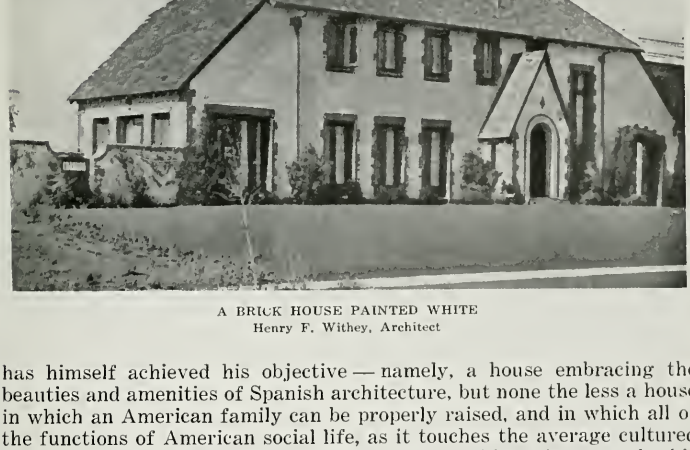
HOUSE OF MR. AND MRS. M. R. GREEN, PIEDMONT, CALIFORNIA
Guy L. Brown, Architect. (See plans, page 86)

of a devotee of it myself; yet when I look at these clean, well handled wood walls, sensing their perfect fitness as well as freshness and agreeableness, I am forced to wonder if the smearing of plaster is not becoming—has not become—an unnecessarily ubiquitous obsession.

But the large bulk of house work in California continues to rest on the Spanish tradition. I say "continues to"; I believe the tendency is increasing. "Mediterranean" might be a better word than Spanish, for Provencale and the more informal Italian elements enter and combine with the truly Spanish. Indeed, I have a friend, native of the south of France, who always refers to much of this type of work as it is done in California as Provencale. But Californians have been brought up on the work of the Mission Fathers, whose inspiration was specifically Spanish; and they like to call their houses Spanish. And it would probably be mere pedantry to quibble over names. The only important thing to remember, in speaking of the best of current domestic work in Cali-

fornia, is that we are not talking about archaeology; "Spanish" has become a mere descriptive adjective, and should really be spelled with a small s.

Two more or less divergent influences are observable in the contemporary Spanish of California—that of the peasant architecture of Spain and the building of the Padres, and that of the more sophisticated Spanish domestic architecture of the cities. Mr. Lansburgh's house is one of the most conspicuous recent examples of the latter class. Mr. Lansburgh himself hits off the difference by saying that in many of the recent Spanish houses in California ladies and gentlemen would be out of place in evening dress; whereas he has endeavored to design a house in which formal entertainment is no less possible than informal living. This, of course, is only a picturesque way of saying that many of the so-called Spanish houses currently built are out of harmony with the necessities or spirit of modern life; and there is no denying the justification of the charge. Nor is there any denying that Mr. Lansburgh



A BRICK HOUSE PAINTED WHITE
Henry F. Withey, Architect

has himself achieved his objective — namely, a house embracing the beauties and amenities of Spanish architecture, but none the less a house in which an American family can be properly raised, and in which all of the functions of American social life, as it touches the average cultured family, can be appropriately carried on. An architect is apt to be his own most exacting client; but difficult clients, if intelligent, are often spurs to effort, and there is no doubt that this house of his own is one of Mr. Lansburgh's best works. A difficult site has been well handled, and the patio-like force-court and entrance loggia are full of color and of great charm. The house begins at the bottom, that is to say, on a good plan, thoroughly workable and thoroughly architectural. Service and living are admirably separated and convenient; the relations of structure, exterior view and interior vista, are cared for with intelligence. On the interior color has been used lavishly but with discretion. Rich polychrome tile floors throughout entrance hall, living room, and

dining room, give a solid basis for real compositions of color and form. Plaster walls of varied but not aggressive texture offer interesting backgrounds throughout. The painted wooden ceiling of the living room is a thing of great beauty. Hangings and furnishings have been selected with an eye to no specious archaeological consistency, but to a higher artistic and psychological one. Many antiques of great beauty—doors, grilles, furniture, and the like—are built into the building or are housed therein; while details such as hardware, lighting fixtures, tile work, etc., are models of modern craftsmanship. Neither Mr. Lansburgh's vision, nor his enthusiasm, has failed him in the designing of this wholly admirable home.

As an exponent of the more unsophisticated type of Spanish design

HOUSE OF PROFESSOR LEROY ABRAMS, STANFORD UNIVERSITY
Birge M. Clark, Architect

no one has been more successful than Mr. Byers, whose interesting adobe work in and around Santa Monica has previously found place in these pages. Mr. Byers knows how to strip a house bare of the customary trappings of architectural finish without leaving it cold or unlivable. He composes with an admirable sense of picturesque relationship of parts, and touches details with the spirit of craftsmanship which vivifies. However far he goes toward the rudimentary or primitive, he never oversteps the line separating legitimate architecture from conscious posing.

As much, I believe, can not be said for Mr. Price's Ince house at Beverly Hills. This is an admirable composition and almost a museum

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of admirable craftsmanship. Yet I believe it is vitiated by a lack of forthright sincerity as a modern American home. It partakes more, I believe, of the nature of the museum. For this reason, despite its consummate achievement in many directions, I am inclined to believe that it represents a pernicious tendency. The interiors of Mr. Johnson's Brock house demonstrate that a more or less deliberately archaic spirit may be carried out without this error.

Mr. Branner's Lewis house and Mr. Hays' Galloway house are examples of my initial statement in discussing our "Spanish" architecture. The average observer would call them Spanish, for all of the Italian that has gone into their making. They might be arguments for the more inclusive and less specific term, Mediterranean; for the spiritual con-

HOUSE OF MR. AND MRS. WELLS F. GOODENOUGH, PALO ALTO
Birge M. Clark, Architect

sistency is there, whatever other elements the archaeologist and historian might discover in them.

Mr. Clark's houses are unassuming and consistent — the sort of thing which must form an adequate basis for a healthy architectural development and appreciation. Mr. Brown's small houses also show that interest need not be a function of size. Messrs. Miller and Warnecke's houses are well conceived and composed. Mr. Newman's small house shows a formality in composition not common in California houses today. The painted brick house by Mr. Withey I should not call entirely Californian in aspect, but it is of decided interest, and suggests varied and unusual possibilities in treatment.

HOME OF MRS. G. ALBERT LANSBURGH, SAN FRANCISCO
G. ALBERT LANSBURGH, ARCHITECT

See plan, page 70

See plan, page 70

HOME OF MRS. G. ALBERT LANSBURGH, SAN FRANCISCO
G. ALBERT LANSBURGH, ARCHITECT

HOME OF MRS. G. ALBERT LANSBURGH, SAN FRANCISCO
G. ALBERT LANSBURGH, ARCHITECT

S. & S. Tile

ENTRANCE HALL, HOME OF MRS. G. ALBERT LANSBURGH
G. ALBERT LANSBURGH, ARCHITECT

Hamilton Studio's Interior

LIVING ROOM, HOME OF MRS. G. ALBERT LANSBURGH
G. ALBERT LANSBURGH, ARCHITECT

LIVING ROOM, HOME OF MRS. G. ALBERT LANSBURGH
G. ALBERT LANSBURGH, ARCHITECT

Furniture by Marshall Laird, Los Angeles

DINING ROOM, HOME OF MRS. G. ALBERT LANSBURGH
G. ALBERT LANSBURGH, ARCHITECT

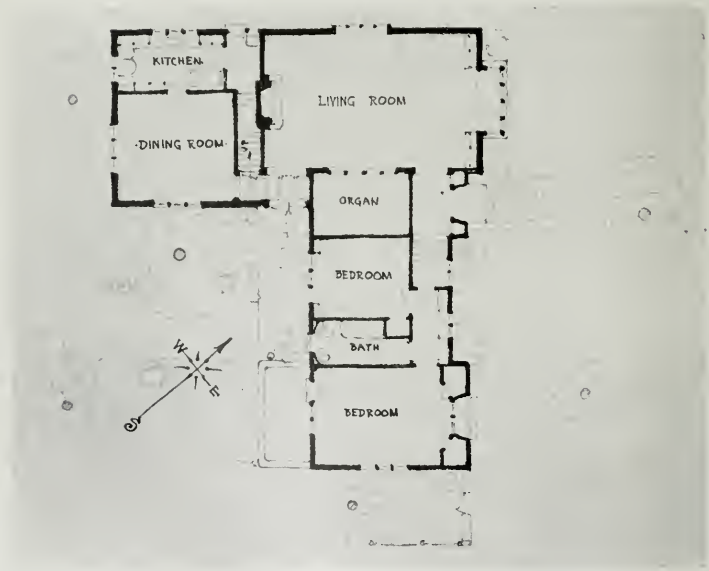
Doors and Furniture by Marshall Laird, Los Angeles.

DINING ROOM LOOKING TOWARD HALL (left) AND BREAKFAST ROOM (right)
HOME OF MRS. G. ALBERT LANSBURGH, SAN FRANCISCO

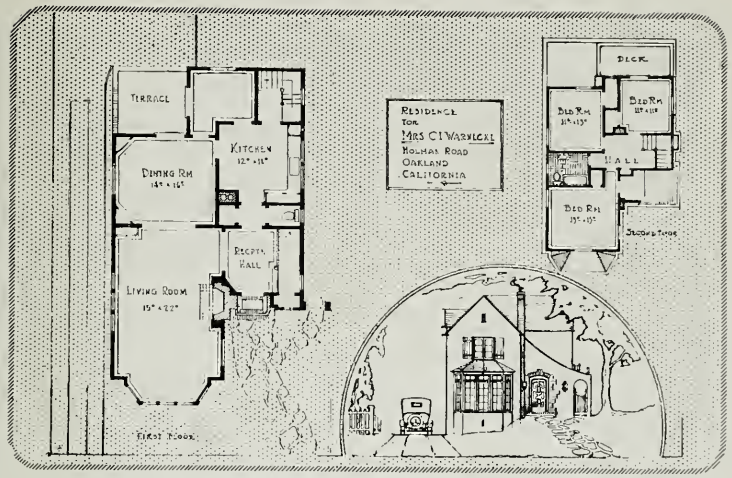
BED ROOM, HOME OF MRS. G. ALBERT LANSBURGH
G. ALBERT LANSBURGH, ARCHITECT

BED ROOM, HOME OF MRS. G. ALBERT LANSBURGH
G. ALBERT LANSBURGH, ARCHITECT

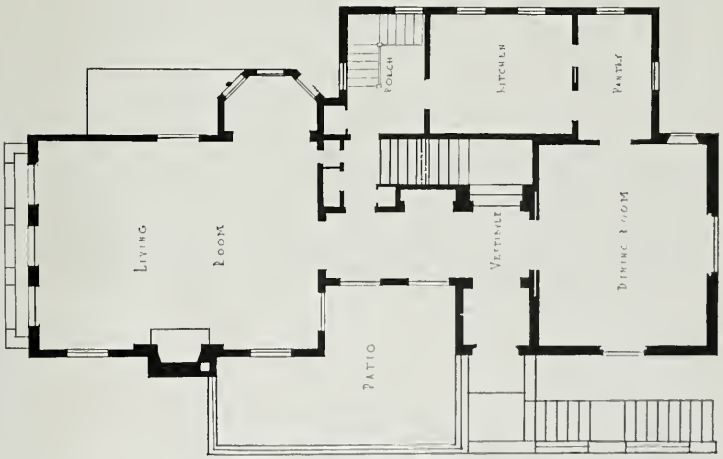
HOME OF MRS. G. ALBERT LANSBURGH, SAN FRANCISCO
G. Albert Lansburgh, Architect. (See frontispiece, pages 60-69)



HOUSE OF MR. J. B. JAMISON, SAN FRANCISCO
Henry H. Gutterson, Architect. (See pages 72-74)



HOUSE OF MRS. C. I. WARNECKE, OAKLAND
Miller & Warnecke, Architects. (See page 75)



HOUSE OF MR. CHARLES L. LEWIS, SAN FRANCISCO
John K. Branner, Architect. (See pages 76-79)

HOUSE OF MR. J. B. JAMISON, SAN FRANCISCO
HENRY H. GUTTERSON, ARCHITECT

See plan, page 70

HOUSE OF MR. J. B. JAMISON, SAN FRANCISCO
HENRY H. GUTTERSON, ARCHITECT

HOUSE OF MR. J. B. JAMISON, SAN FRANCISCO
HENRY H. GUTTERSON, ARCHITECT

See plan, page 71

HOUSE OF MRS. C. I. WARNECKE, OAKLAND
MILLER & WARNECKE, ARCHITECTS

See plan, page 71

HOUSE OF MR. CHARLES L. LEWIS, SAN FRANCISCO
JOHN K. BRANNER, ARCHITECT

HOUSE OF MR. CHARLES L. LEWIS, SAN FRANCISCO
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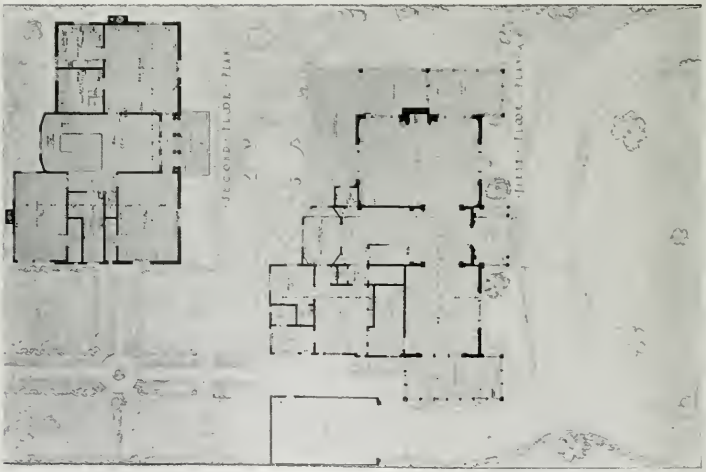
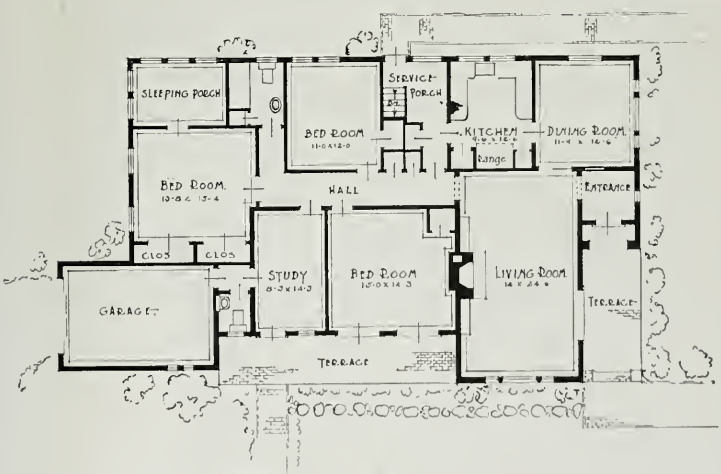
HOUSE OF MR. CHARLES L. LEWIS, SAN FRANCISCO
JOHN K. BRANNER, ARCHITECT

HOUSE OF MR. AND MRS. F. A. SMALL, PIEDMONT, CALIFORNIA
William Arthur Newman, Architect

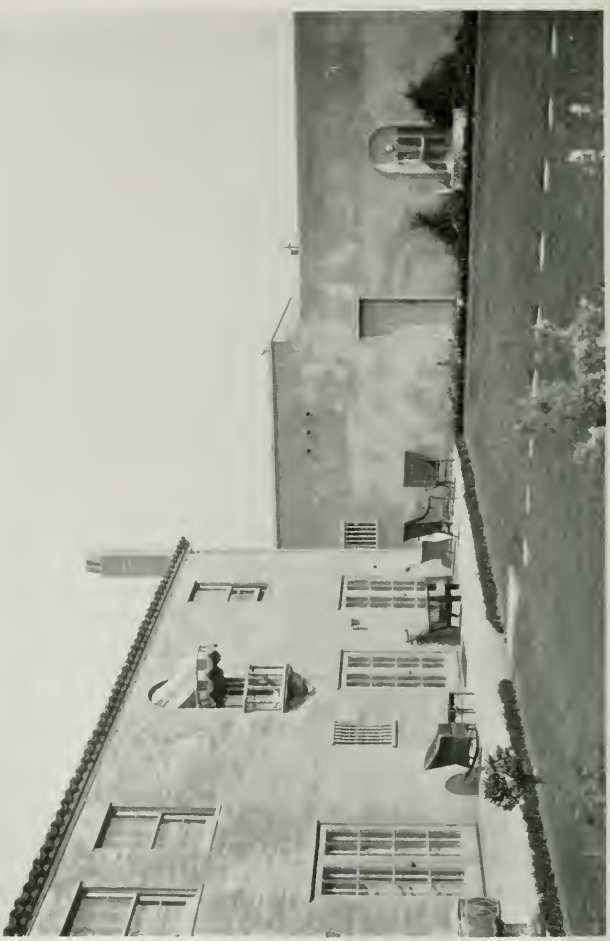


PLANS, HOUSE OF MR. AND MRS. F. A. SMALL, PIEDMONT
William Arthur Newman, Architect

HOUSE OF MR. BIRGE M. CLARK, PALO ALTO
Birge M. Clark, Architect

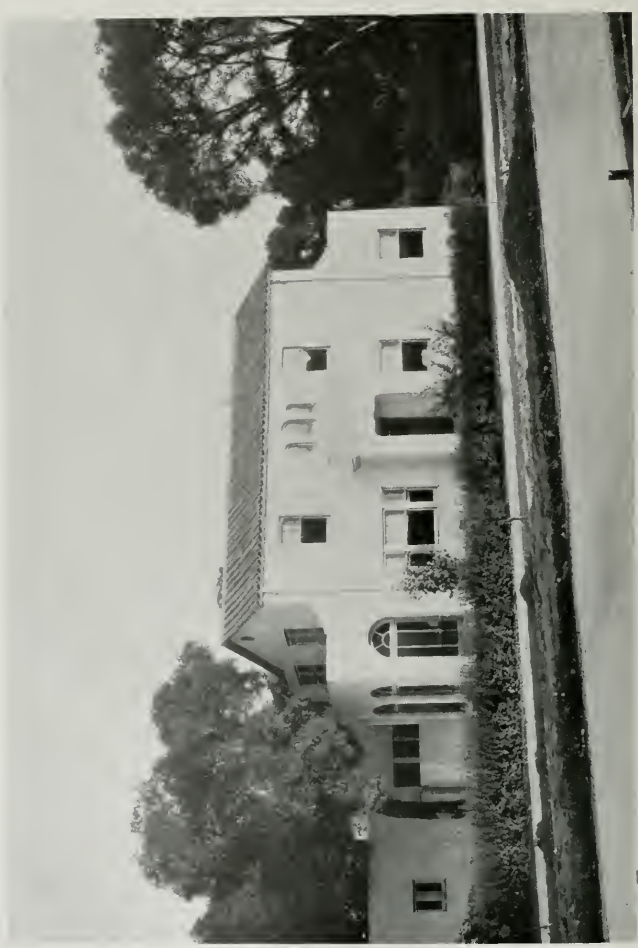


PLAN, HOUSE OF MR. BIRGE M. CLARK, PALO ALTO
Birge M. Clark, Architect



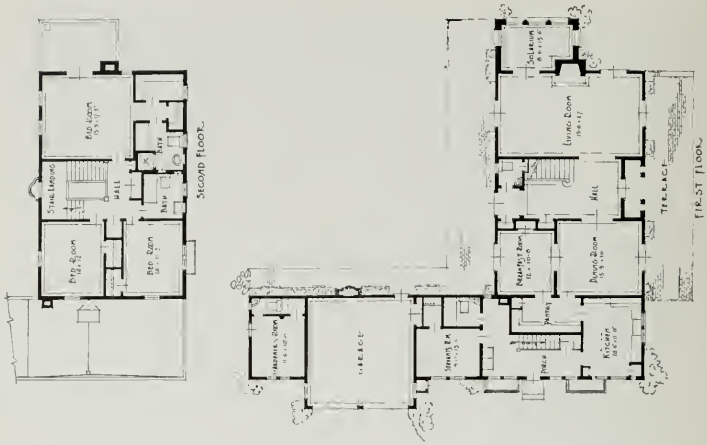
HOUSE OF MR. AND MRS. GUSTAV LAUMEISTER, PALO ALTO
BIRGE M. CLARK,
ARCHITECT

HOUSE OF MR. AND MRS. GUSTAV LAUMEISTER, PALO ALTO
BIRGE M. CLARK, ARCHITECT



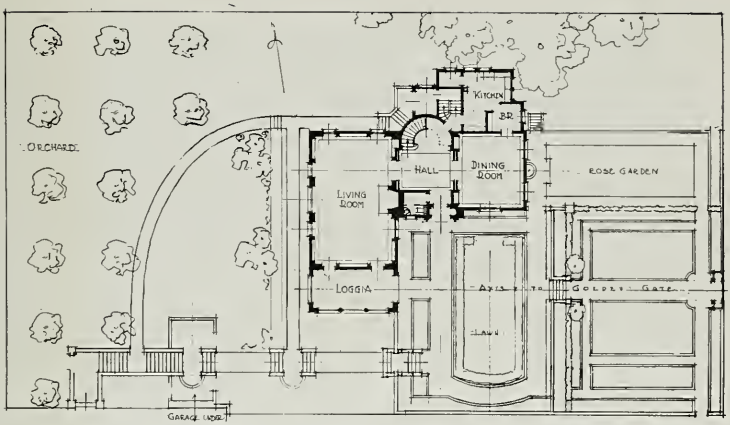
HOUSE OF MRS. W. L. PEET, PALO ALTO
BIRGE M. CLARK, ARCHITECT

HOUSE OF PROF. S. D. TOWNLEY, STANFORD UNIVERSITY, PALO ALTO
BIRGE M. CLARK, ARCHITECT



HOUSE OF MR. AND MRS. GUSTAV LAUMEISTER, PALO ALTO
Birge M. Clark, Architect. (See page 82)

HOUSE OF MR. AND MRS. M. R. GREEN, PIEDMONT, CALIFORNIA
Guy L. Brown, Architect. (See page 56)



HOUSE OF MR. J. D. GALLOWAY, BERKELEY, CALIFORNIA
William C. Hayes, Architect. (See pages 88-90)

HOUSE OF MISS SARAH COLEMAN BROCK, SAN DIEGO, CALIFORNIA
William Templeton Johnson, Architect. (See pages 91-93)

See plan, page 87

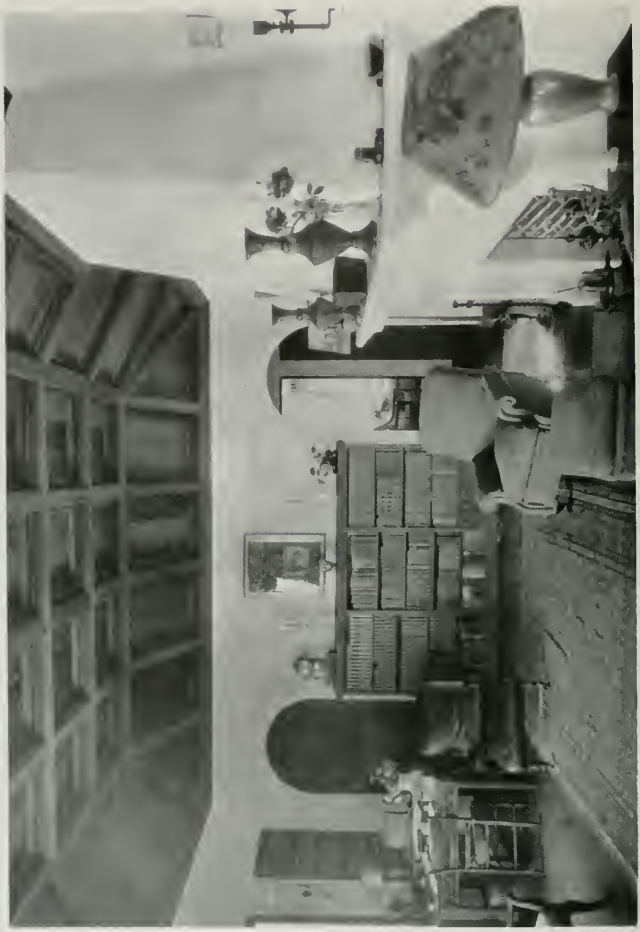
HOUSE FOR MR. J. D. GALLOWAY, BERKELEY
WILLIAM C. HAYES, ARCHITECT

HOUSE FOR MR. J. D. GALLOWAY, BERKELEY
WILLIAM C. HAYES, ARCHITECT

HOUSE FOR MR. J. D. GALLOWAY, BERKELEY
WILLIAM C. HAYES. ARCHITECT

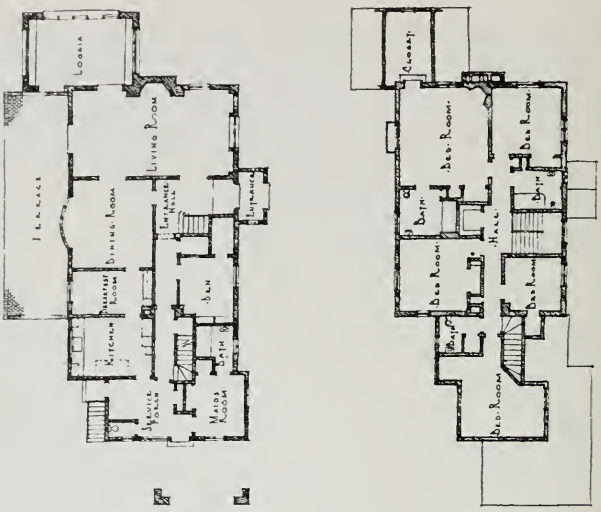
See plan, page 87

HOUSE OF MISS SARAH COLEMAN BROCK, SAN DIEGO
WILLIAM TEMPLETON JOHNSON ARCHITECT



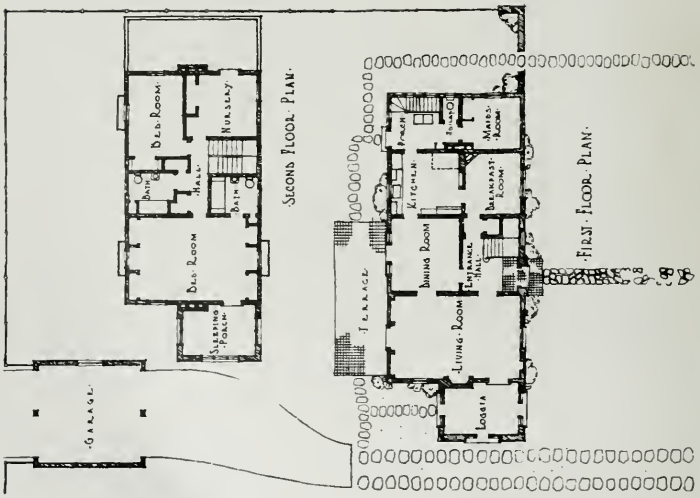
HOUSE OF MISS SARAH COLEMAN BROCK, SAN DIEGO
WILLIAM TEMPLETON JOHNSON, ARCHITECT

HOUSE OF MISS SARAH COLEMAN BROCK, SAN DIEGO
WILLIAM TEMPLETON JOHNSON, ARCHITECT

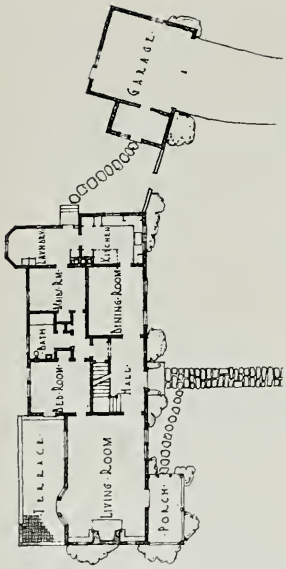


First Floor Second Floor

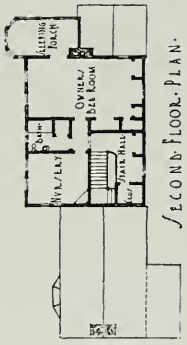
HOUSE OF MR. ROYAL MILLER, SACRAMENTO, CALIFORNIA
Dean & Dean, Architects. (See pages 96-97)



HOUSE OF MR. WILLIAM S. HART, SACRAMENTO, CALIFORNIA
Dean & Dean, Architects. (See page 98)

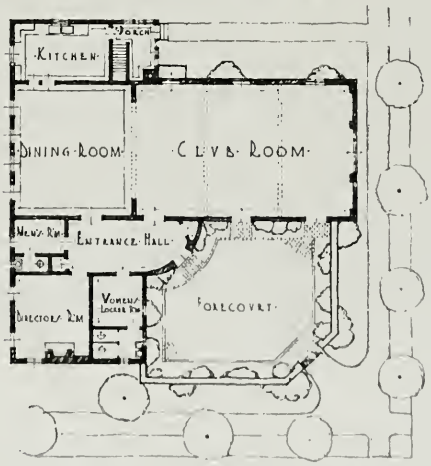


First Floor

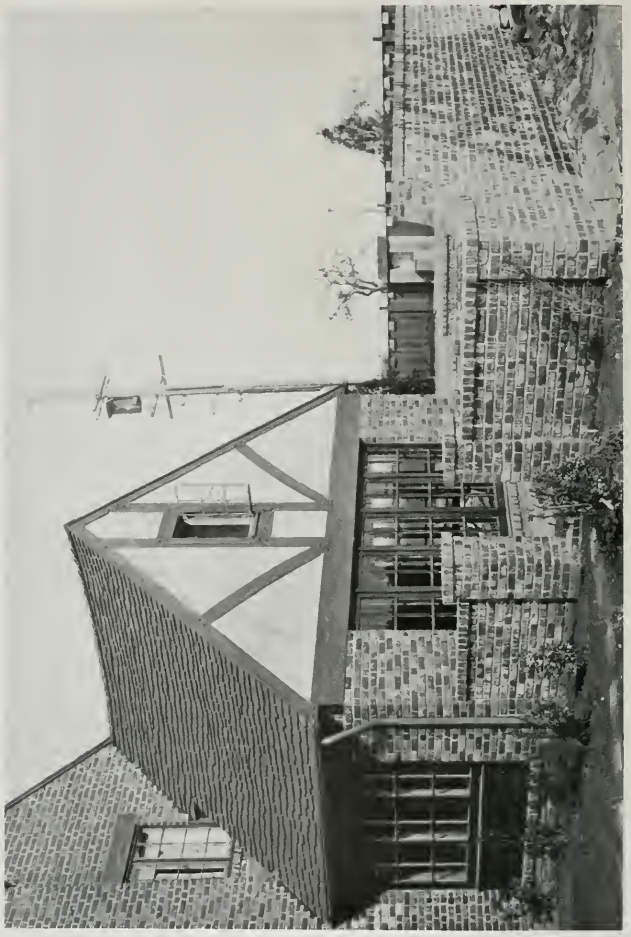


Second Floor

HOUSE OF MR. B. B. MEEK, OROVILLE, CALIFORNIA
Dean & Dean, Architects. (See page 101)

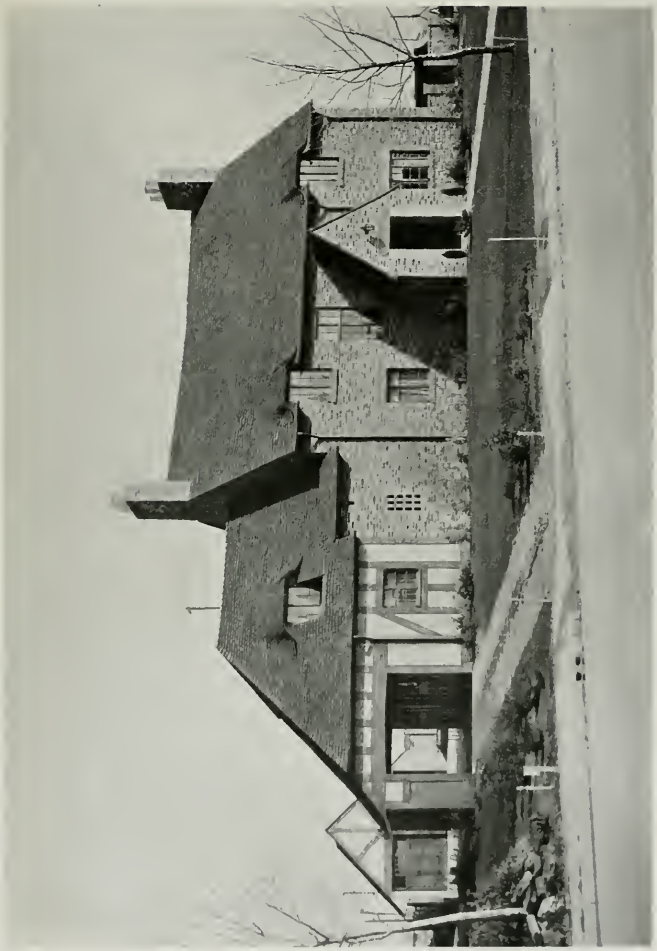


WOMEN'S CLUB, LINCOLN, CALIFORNIA
Dean & Dean, Architects. (See page 99)



HOUSE OF MR. ROYAL MILLER, SACRAMENTO, CALIFORNIA
DEAN & DEAN, ARCHITECTS

See plans, page 94



HOUSE OF MR. ROYAL MILLER, SACRAMENTO, CALIFORNIA
DEAN & DEAN,
ARCHITECTS

HOUSE OF MR. WILLIAM S. HART, SACRAMENTO
DEAN & DEAN,
ARCHITECTS

See page 94

See plan, page 95

WOMEN'S CLUB, LINCOLN, CALIFORNIA
DEAN & DEAN, ARCHITECTS

GOLF CLUB HOUSE FOR WILLIAM LAND PARK, SACRAMENTO
DEAN & DEAN, ARCHITECTS

See plan, page 95

HOUSES OF MR. B. B. MEEK AND MR. RAYMOND A. LEONARD, OROVILLE
DEAN & DEAN,
ARCHITECTS

See plans, page 108

Photographs by William Polk Hellen

HOUSE OF MR. AND MRS. JOHN BYERS, SANTA MONICA, CALIFORNIA
ARCHITECT
JOHN BYERS.

HOUSE FOR MR. AHEARN, SANTA MONICA
JOHN BYERS, ARCHITECT

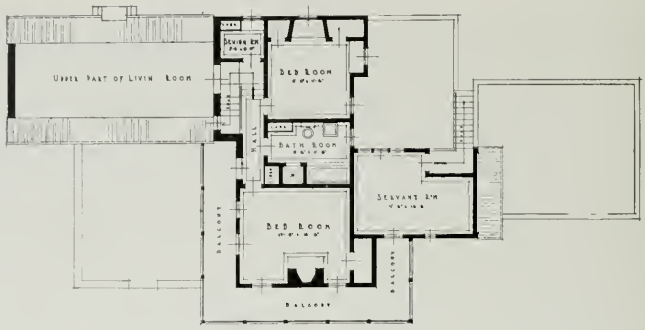
HOUSE FOR MRS. E. W. ZIMMERS, SANTA MONICA
JOHN BYERS, ARCHITECT

See plan, page 108

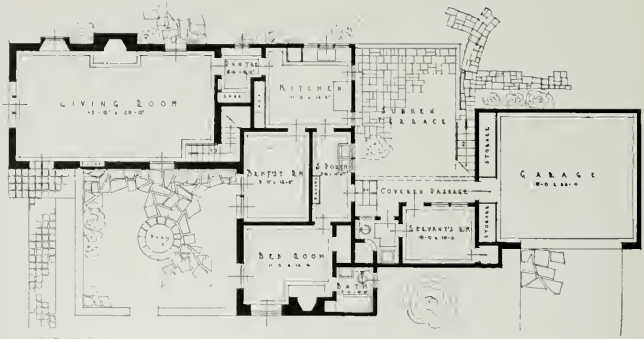
HOUSE FOR MRS. E. W. ZIMMERS, SANTA MONICA
JOHN BYERS, ARCHITECT

STUDIO, HOUSE OF MRS. H. M. GORHAM, SANTA MONICA
JOHN BYERS, ARCHITECT

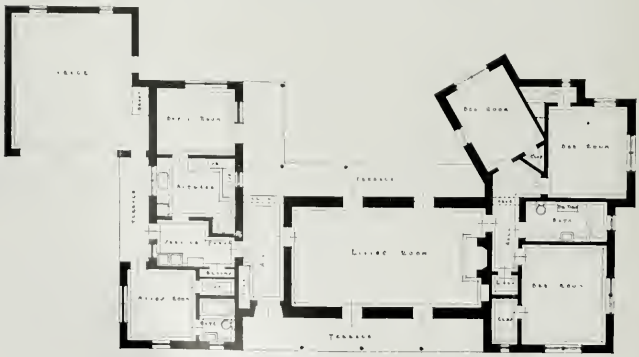
LIVING ROOM, HOUSE OF MR. MERRITT, SANTA MONICA
JOHN BYERS, ARCHITECT



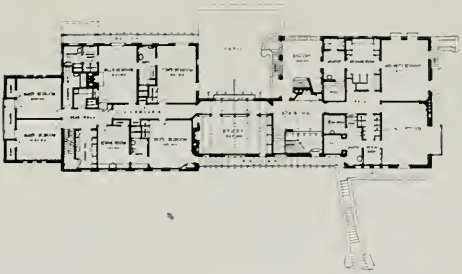
SECOND FLOOR PLAN



FIRST FLOOR PLAN, HOUSE OF MR. AND MRS. JOHN BYERS, SANTA MONICA
John Byers, Architect. (See page 102)



HOUSE OF MRS. E. W. ZIMMERS, SANTA MONICA
John Byers, Architect. (See pages 104-105)



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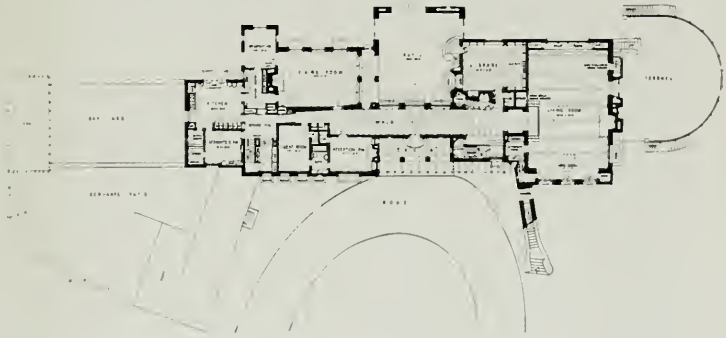
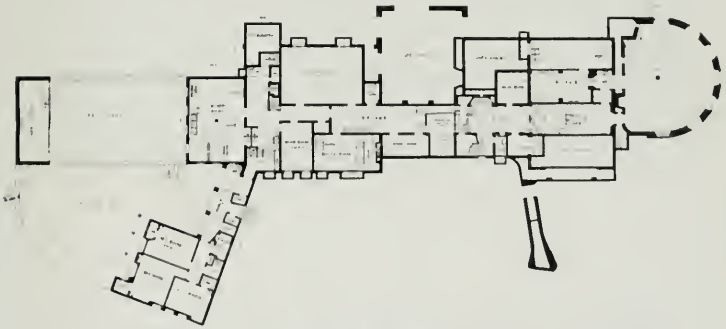


FIRST FLOOR PLAN



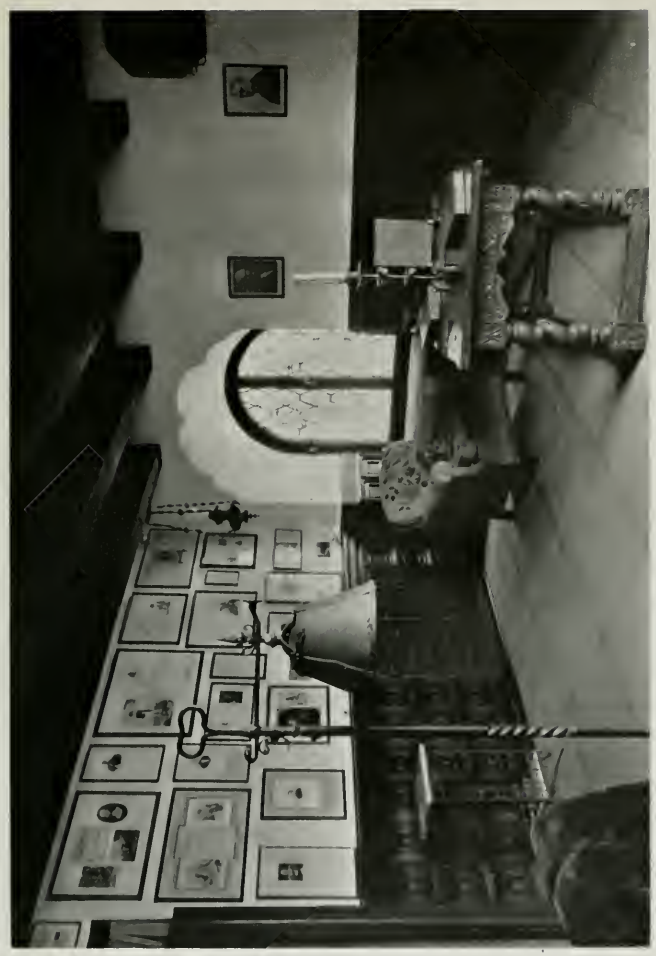
BASEMENT PLAN, HOUSE OF MR. THOMAS H. INCE, BEVERLY HILLS, CALIFORNIA
Roy Seldon Price, Architect. (See page 110-114)

SHOP AND GARAGE, HOUSE OF MR. THOMAS H. INCE, BEVERLY HILLS
ROY SELDON PRICE,
ARCHITECT

PIGEON TOWER AND WORK ROOMS, HOUSE OF MR. THOMAS H. INCE
ROY SELDON PRICE, ARCHITECT

See plans, page 109

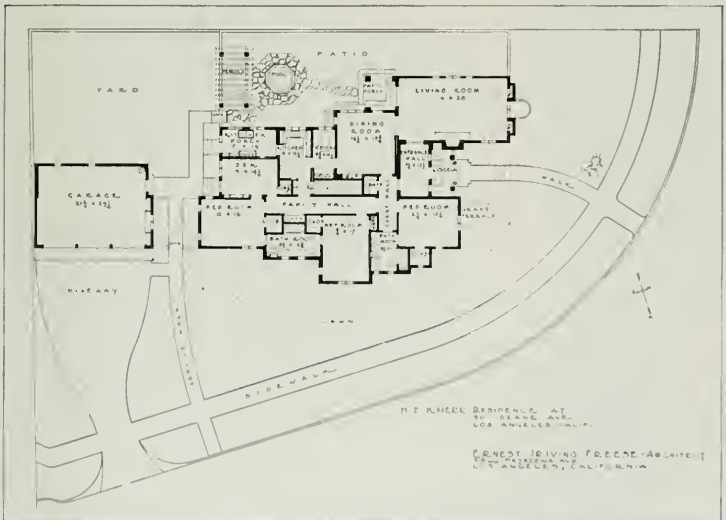
HOUSE OF MR. THOMAS H. INCE, BEVERLY HILLS
ROY SELDON PRICE, ARCHITECT



HOUSE OF MR. THOMAS H. INCE, BEVERLY HILLS
ROY SELDON PRICE, ARCHITECT

HOUSE OF MR. THOMAS H. INCE, BEVERLY HILLS
ROY SELDON PRICE, ARCHITECT

SPANISH BUNGALOW FOR MR. H. E. KNERR, LOS ANGELES
Ernest Irving Freese, Architect



PLAN, BUNGALOW FOR MR. H. E. KNERR, LOS ANGELES
Ernest Irving Freese, Architect

New Examining Board

George H. Shanley of Great Falls, Fred F. Willson of Bozeman and W. R. Plew of Bozeman constitute the Montana Board of Architectural Examiners recently named by Governor Erickson. Mr. Plew succeeds C. C. Cohagen of Billings. The board will serve until March 27, 1929.

How Kitchen Equipment is Being Changed to

By RAY B. COX*

HOW well we remember back twenty years ago when women did not have the convenience of the present day household equipment as well as many other modern devices, ranging from the washing machine to the limousine de-luxe.

We all have in the last few years been giving much serious consideration to the problems that confront women in housework, with a view to the elimination of drudgery. There is a distinct improvement in these matters which we had perhaps heretofore regarded as necessary evils.

Housekeepers slaved for years over wash tubs, the old wood and coal stoves, the old fashioned method of sweeping, dish washing and other arduous tasks.

Then came the war days and shortage of servants when husbands volunteered to take a hand as necessity seemed to rule in helping with the housework. "Good Heavens," he complained, "isn't there a simpler way to take the dirt out of the rugs? Can not washing be done by machinery? What's the use of having electricity and motors if they are not to be used? Why not improve working conditions in the houses?"

In time he began applying with the aid and suggestions of a hopeful wife, some of the methods that have been found desirable and helpful in the factory and the offices. Women knew what they wanted when it came to the matter of improvements, but they do not run factories; the sphere of designing and mechanics has never been their work.

This is why the man should have and is taking an interest in the designing of new mechanical devices, electrical machines, space saving built-in fixtures and modern cooking and heating methods. He began his work towards doing his share of making an ordinary house a home. He saw the woman's problem from a new angle and the result is that the household work made a gigantic stride forward and is ready for much more.

Women are demanding more and more application of efficient method and provisions for them in the homes that are built today. Houses do not rent or sell

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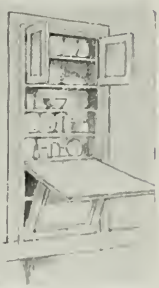
Meet the Demand of the Housekeeper

well that are provided only with hardwood floors and fire-places or a breakfast room or carpenter-made so-called built-in fixtures They must have a modern electrical system, a higher quality of plumbing fixtures, factory made folding furniture, unit equipment of kitchen cabinet work, porcelain enameled cast iron sinks, built-in electric ranges, automatic water heaters, clean heating methods, folding wall beds, all constructed with an idea of efficiency, cleanliness, and beauty designed by experienced people along the very best lines known to modern industry.

It is a well known fact that all articles can be made in a factory by standardized methods, by the aid of machinery and skilled workmen much better than any one can do them by hand with the best of tools or better than the average carpenter is willing to do with the facilities at hand and the amount of money the home builder is willing to spend.



For illustration let us take the evolution of the present day kitchen sink. The writer can well remember when he saw the first kitchen sink before the days of running water. It had been attached to the wall with a pitcher pump next to it, drawing water from a well near by. Obviously it soon became obsolete. Running water soon was available, back splasher and drain board were next added. Although made of wood, the sink was soon connected to sanitary sewer systems, better drain boards were made, better sink cases were made, tile for drain boards and backs became popular. The magnasite drain and back came then into use, later being coated with a glossy white sanitary non-porous covering. Today we find the most popular sink, however, to be the cast iron porcelain enameled, all made in one piece.

Another modern improvement is offered in space saving kitchen unit furniture. Standard unit fixtures of standard width, height and depth are made in large volume under factory conditions, designed with an eye to beauty and convenience, constructed in sizes that can be shipped and handled and that will fit all varied conditions or individual tastes, special hardware and other attachments with a selection of

material of the proper kind for the place in which it is to be used.

The evolution of bedroom equipment has been remarkable. From the four-poster bed to the present day steel furniture and to the built-in folding bed which actually adds a room to the house has been a long stride and has taken many years. The present day wardrobe closet is a wonderful improvement over our old fashioned closets.

These all save space and work in housekeeping besides many added conveniences. They take care of the needs that have long been felt by housekeepers.

To supply a need is the desire of everyone; to know these needs is our duty. To reduce the need for household labor without the elimination of any of the pleasures or advantages of the home is a desire of everyone keeping house.

Edison has said that the home of the future will sometime be servantless due to improved electrical devices. It has been the hope of many inventors to reduce labor and save the waste of useless space, but each thing has been a speciality for a special purpose and not necessarily a unit to fit into one whole assembly.

There must be a place for everything and to keep these things in their place is the work of someone. The housekeeper's cry today is for "More places to put things."

One urgent need in the workshop of the house, the kitchen, is for a systematized, standardized product to permit the coordination of work to greater advantage. Kitchen work consists of attending to a multitude of small detail jobs. A great many articles must be stored in varying quantities easily accessible. Some of the operations must be done over and over many times daily, using time and again the same articles. Work consists of receiving, storing, preparation, serving, clearing and cleaning.

One aid to lessening this work is to reduce the space without cramping the quarters. To provide a place for everything and particularly many small things is another. To co-relate the many different units of equipment is a big help. To eliminate chairs and table from the floor space when not in use but ready for instant demand is a help. To provide a proper and adequate setting for the many new electrical and plumbing fixtures of recent invention helps some more. To provide a central work unit that would be the equivalent of the factory worker's bench is another most valuable labor saver.

Industry has devised and modern factory methods have made possible standard unit built-in furniture that permits the accomplishment of all of these things to the satisfaction of many glad housewives.

* * * *

Terra Cotta of the Italian Renaissance

One of the most recent publications of the National Terra Cotta Society, 19 West 44th street, New York, is entitled, "Terra Cotta of the Italian Renaissance."

This work is issued at the nominal price of $3.00 per volume and will be sent by the National Terra Cotta Society on approval to architects and those identifying themselves as architectural draftsmen and students in architectural schools. The issue is 6000 copies.

The contents are 200 full page plates with descriptive captions from photographs taken especially for the National Terra Cotta Society by Mr. Arthur Frederick Adams, A. I. A., in a trip through Italy during the summer of 1923. This is the first work which offers a comprehensive survey of the terra cotta architecture of early Italy.

STUDIO OF MRS. K. HOPE HAMILTON, SAN FRANCISCO

Spanish Interiors

By K. HOPE HAMILTON

MAN expresses his ideas, desires, and emotions to others, by the means of language, music, color and form; and in his expression of thought seeks to understand the world and make the world understand.

Man's natural and universal impulse is to create, which is impelled by his instinctive appetite to provide for himself food, clothes and shelter. His creative powers are of a quality to satisfy his aesthetic sense, or appetite for beauty.

As states of civilization have changed and conditions have evolved different needs, man has adapted his creative work to the approximate satisfaction of his requirements and desires. Hence, in all ages, man's work has represented necessities, interest, ideals and needs.

History has not only recorded life by deed and event, but has left records in stone, metal, woods and textiles and takes to form of architecture, sculpture, furniture, and textile.

Art objects and objects of utility have a so-called vital human interest, each expressing elements of fitness for use and beauty. The ideals of a nation are embodied in these objects and their decorations.

The period of time represents the dominant influence which controlled the various expressions, a nation's life interest. It is worth while to make a short analysis of just what influences were at work in the development of real artistry which mark the period of design in decoration.

There has been a demand for architecture and decoration which expresses the spiritual and humanistic influence of the conservative and religious people of Spain. To produce interiors which have a true Spanish feeling, it is imperative that your architect is capable of creating the picturesque architectural background which forms a permanent decoration.

An established principle in the Spanish home was not to cumber with objects, pieces they did not definitely need. Simplicity in their habits was the cause for this characteristic austerity, as expressed in Spanish interiors. Their restraint in the number of objects employed and the consequent necessity of wide open spaces for pieces to stand alone contributed dignity, and enhanced their artistic value.

These interiors produce a pleasing effect upon the subconscious and the conscious mind. In seeking to understand our Spanish heritage, great value and importance is to be attributed to their arrangement of furniture and art objects.

Textured fabric of brilliant colorings and vivid contrast were used in large variety for hangings to adorn their walls in lieu of the embellishments incorporated in wall structures. Painted canvases of religious subjects, and emphatic designs of vivid colors were used as decorations for wall hangings. Velvet frieze hangings enriched with embroidery of gold thread with applique medallions, cartouches and like, with appropriate accompaniment of scrolls, produced an effect of spendor.

Embossed and engraved leathers were sewed together to make hangings, and were often used for upholstering of chairs and benches. Carving on doors and beams of ceilings were enhanced with beauty by color and design.

Individualism and strength of character were emphasized in the use of wrought-iron grills for window openings and hand rails. The reason for this metallic quality of artistry in wrought-iron is that Spain's iron mines were worked from the ancient Roman times; when the Moors conquered Spain they brought with them their liking for metal work and metal ornament, thus encouraging its use and appreciation.

Characteristic of Spanish furniture, is its rectangular construction. Tables have turned balusters or spiral supports, under-braced near the floor on turned bun or ball feet, or trestle legs splayed outward, which are especially characteristic recalling their primitive removable trestle and board table. Metal mounts and nail heads adorned cabinets and chairs.

One of the most significant and characteristic pieces of furniture in the Spanish period of furniture was the vargueno, its architectural design resembling a minature classic temple.

Decoratively, the vargueno is unique both inside and out. The front closed shows a number of pierced plaques of iron laid over red velvet. The locks which adorned this piece of furniture were often removed and sold, they were so rich and costly. The finer models were inlaid with gold, ebony and shell. But splendid though these pieces were, they did not charm like the primitive walnut iron-mounted pieces which are so truly Spanish.

Historical interest and association for the picturesque Spanish architecture and interiors is portrayed in the many beautiful structures in Florida and California, where the natural setting is provided by the semi-tropical climate.

The lingering traditions of Spain and the expression of her people in art and architecture are the inspiration we enjoy today.

Maximum Results At Minimum Cost Small Homes of Merit†

By MAX E. COOK, Member A. S. A. E*

THE desire to own our own home has become firmly established with most of us. "Home-Sweet-Home" has a newer and much fuller meaning to a family, particularly where income is limited, when there is being created an equity in a permanent home instead of merely paying rent to a landlord for a place to hang one's hat.

With the numerous returns and valuable benefits in mind, it is a pertinent question whether a family can really spend too much for a genuine home. And still, with all the sentiment surrounding the home idea, the making of an attractive, agreeable and successful home yet has in it more of business than of sentiment.

The actual building of a home is a business proposition. It requires an application of sound business principles and the adoption of good business methods. This is particularly true if cost of construction, maintenance and upkeep are to be given due consideration and kept down to a minimum.

Fundamentally, in preparing to build there should be:

(a) A desire for improved architecture of distinction and good taste.

(b) A determination to avoid waste not only in the selection and disposition of the most suitable materials entering into the construction, but in the layout of the plan to render it most livable.

(c) A conviction that it is false economy to sacrifice the essentials in honest, durable, safe, and desirable construction.

The worth of a well studied predetermined plan cannot be overestimated. To proceed without proper plans and specifications, or to repeatedly make changes after the building contract has been let, usually proves costly and generally results in dissatisfaction on all sides.

The Architect

The value, from start to finish, of an intelligent and conscientious control of the multitude of details, by a competent architect should be given greater consideration. To produce a home of charm and character, one that is planned economically and conveniently, requires great skill and much experience. It is seldom the result of accident.

The amount expended for professional architectural services of the proper kind is saved many times over. True economy demands an expenditure in this direction, although it is too often regarded as unnecessary, with dire results.

It is true that an architect cannot always be retained for the smaller dwellings, but there are nevertheless recognized plan agencies that make available, at nominal cost if indirectly, the plans and services of competent architects, and there are yet other reliable plan services that employ qualified architects equipped to render valuable assistance to the home builder.

The Contractor

Responsible contractors welcome a complete set of plans and specifications from which to figure and to build.

There is no satisfactory substitute for a good set of plans and speci-

*California Redwood Association, Architectural Service Department.

†A paper presented at the Third Annual Conference of the Pacific States Building and Loan Associations, Los Angeles, California.

fications. Only the unscrupulous contractor will discount their worth, for without them, guided by unsound selfish motives, he is able to substitute inferior materials and adopt poor practices at the owner's expense.

Better plans and more definite specifications insure bigger and yet safer loans.

High class workmanship should be given the same consideration as high quality in materials, for after all, it is "not so much what you pay, as what you get for what you pay."

Architectural Merit

Every detail of our home has an important influence on our outlook, our contentment and our happiness. It can cost as much, and unfortunately often costs more, to build an unattractive commonplace home, as one having architectural character and distinction. In addition to its many good influences, beauty from good design adds very materially to resale value. It is an asset, not a liability, even to the extent of decreasing the percentage of depreciation over a term of years.

Economy in good design is accomplished by simplicity and honesty, by the omission of elaborate finish and meaningless ornaments, by intelligent planning to obtain convenient arrangement with direct intercommunication, and the avoidance of useless halls and waste spaces.

Success depends very largely on experience and skill.

Waste

One of the most effective ways of keeping down the cost is to eliminate waste, not only by designing to produce, within a limited space, the maximum toward home requirements, but by using materials most suited and to the best advantage. The saving effected through careful design, to permit the use of standard lengths of lumber and acceptable stock patterns, alone may be sufficient to meet the first year's interest on the investment.

To obtain maximum results at minimum cost, think of all the things that can be omitted at the outset, yet that may be added later at minimum additional expense or inconvenience.

Maximum results are obtained only where every dollar works and buys real value. It is false economy to substitute materials that may be "low priced" at the outset, yet expensive in the end. Good service represents value. Quality materials give service resulting in true economy.

The same obtains with workmanship.

Knowledge, experience and skill, in both design and construction, are required to insure a correct combination and appropriate use of materials at minimum cost.

Maximum Results at Minimum Cost

The problem of building a better home, obtaining maximum results at minimum cost, is fundamentally the same whether in the country or in the city. Although the farmer as a rule requires a bigger house and generally has less money available, this is offset, to some extent at least, by the fact that he is perhaps more often able to apply his own labor.

After fourteen years' experience in commercial and general architectural work, I became possessed with the idea of contributing what I could toward the betterment of farm architecture and the improvement of farm buildings in this state.

For six years, as farmstead engineer, I had charge of design and

supervision of building construction for the Division of Land Settlement, State Department of Public Works, and what is now known as the State Land Settlement Board. Whereas my work included the handling of necessary administration buildings, town site houses, community center structures, etc., my real interest and greatest activity was in laying out individual farmsteads with required farm buildings. This I attacked with an ambition to do what I could toward making the farm a better place to live, a better home.

In this direction, as a state employee, I furnished farmers with a complete architectural service, designing to meet individual requirements, issuing specially prepared plans and specifications, obtaining competitive bids, letting contracts, and supervising construction of over fifteen hundred separate structures.

It may be of interest to you to learn, very briefly indeed, some of my findings.

In undertaking to assist a farmer and his wife (she should always be included), in building a home, I can assure you that the family budget was the most formidable obstacle. Those of you who may have succeeded in building a well constructed, durable, practical and presentable four or five room house, not forgetting the value of paint, for less than a thousand dollars, can appreciate this. However, long ago I learned not to count money until after minimum requirements were determined. Even with but a thousand dollars in sight, it is justifiable to boldly proceed with the design of a three thousand dollar house, when convinced that nothing short of this will prove wholly satisfactory in the end.

Three Ways of Building

This opens up three distinct and separate means by which a successful house may be built without sacrificing quality, yet where available funds are limited.

(a) Unit System of Building.—A house may be designed with all that might be desired in size, equipment and finish, and yet in such form that it can be built in units to suit the purse. This is a perfectly feasible plan when handled skillfully, with provision to avoid waste in making later additions and by contemplating maximum salvage possibilities. This has been done successfully and will be repeated a great deal more when it has been more fully investigated and become better known.

The units as they are built are complete in every sense, and at least that unit or portion of the house that is built is enjoyed to the limit, containing as it does all the features of convenience and finish individually desired.

(b) Shell or Skeleton System.—It is taken for granted that building on the unit plan would not be satisfactory for a big family where greater division and larger floor spaces are required, with still limited funds available.

Here there is but one thing to do, i.e.: search and research for non-essentials. Omit only those things that can be added later with the least inconvenience, and without sacrifice to good foundation, honest framing, solid construction, durable walls and roof. In other words, build the shell or skeleton of a house, but let it be the nucleus of a good house, a better home.

In this direction, some of my hardest effort has been spent in preventing home builders from attempting to "bargain" for a cheaply constructed, shoddily built house, wherein there are no points of merit except, to the unschooled, "it looks like a lot of house for the money."

(c) **Temporary Dwelling.**—Where there is insufficient money available at the outset to build according to recognized standards, either a finished unit of a permanent home, or a good house, honestly built, that may yet be incomplete as to full equipment, finish or refinements, it sometimes proves desirable to erect a building that may be occupied temporarily as a dwelling, with a plan for conversion at a later date into a utility building such as a garage, or, more particularly in the country, such as a summer kitchen, laundry, work-shop, tenant house, etc.

A temporary dwelling if properly designed, can have many conveniences, and can be made attractive and very livable at a considerably smaller investment, than by any other means. The dwelling proper, to be built later, should be sufficiently well in mind to permit of purchasing and incorporating into the temporary dwelling, sash, frames, doors, screens, fixtures, etc., that are permanently suitable and that may be transferred later.

Building or Renting

These are but other ways of building a home on the installment plan. I have built many buildings of each of the foregoing types, not limited to houses, but including all classes of farm buildings. These methods have proven satisfactory and in many instances the means of enabling families to own their own homes which might not have been accomplished otherwise.

I do not mean to advocate that any one of the three methods outlined will suit all demands. As a matter of fact, one assumes a big responsibility in influencing a home builder in determining his exact requirements. The human element cannot be overlooked. A family without real ambition and firmness of purpose should not be encouraged to build a temporary dwelling if there remains any doubt as to their intention and ability of carrying on toward the development of a better home later. Such a family had better rent.

The same obtains, although perhaps to a lesser degree, with the other two types mentioned.

Fundamentals—Non-essentials

To obtain maximum results at minimum cost, we must keep in mind the fundamentals of good sound construction. We must exercise common sense, uncommonly well. It is false economy to attempt to save by using inferior materials, poorly installed.

The non-essentials must first be weeded out. Things that may be added later at the least additional expense may well be omitted at the outset.

Included might be features such as porches that, although desirable, may yet be added later. The temporary omission of a porch may result in a saving of five or six hundred dollars.

A needed porch may be provided yet reserving the enclosure of same with sash for a later date.

If skillfully handled, a pergola or an awning with a touch of color, may substitute very successfully for a few years at least, for a more elaborate type of entrance.

A fire-place, although highly desirable, may very often be omitted for the time being, dependent on the design, and by adding it later, a saving can be effected at the outset of anywhere from one hundred to four hundred dollars.

Omission of Non-Essentials

These are merely suggestive of the kind of things that may be omitted without sacrificing essentials.

(a) **Foundation and Basement.**—Starting at the foundation, it would seem unnecessary to advocate concrete or masonry for a permanent dwelling. For sills on the masonry, California redwood is demanded generally by city ordinances and good authorities. This home-grown product has a durability second to no other wood. With white oak rated by the U. S. Forest Products Laboratory as 100 per cent durable, redwood ranks 125 to 175 per cent by the same authority.

As much as 15 per cent of the total building cost can be saved by omitting the basement or cellar. Before a basement or cellar is definitely incorporated into the plans, its relative cost and worth should be considered.

In designing and building farm houses, I have found a very effective substitute for an excavated basement, and in the minds of many an improvement over the cellar, in the form of a storage room for vegetables, fruit, etc., located in convenient proximity to the kitchen and back porch. This room is lined with Redwood T and G ceiling, and the space between the studs and between the ceiling joists overhead, may be filled with shredded redwood bark, which has great insulating qualities, or saw dust and shavings. Double sash and doors are provided for further insulation.

This type of storage is very successful where the nights are cool, it being necessary, only, to open the windows in the evening and close them in the morning.

There is less fire hazard in a cellarless house, and unless the lot is a sloping one, providing a space under the ground floor with little if any excavation, it is well worth while to consider its omission.

These remarks do not so much concern the city or suburban small home since a cellar here is more the exception than the rule, but the Eastern farmer settling in California, accustomed to a cellar in the East, invariably takes it for granted that a cellar is a necessary evil. He should be convinced, before paying his good money, that a cellar is worth what it costs. Personally, I am of the opinion that it is not.

(b) **Frame.**—The frame should, under no circumstances, be sacrificed for either finish or equipment, since this all-important part of the house is more or less inaccessible for later repairs and is the very backbone of the structure.

All timbers should be of suitable grade and of adequate size and spacing to insure rigid construction. Suitable bracing, insect and fire stops, proper insulation to insure warmth in winter with attendant lower heating bills, and coolness in summer should not be sacrificed.

It is foolhardy to space studding twenty-four inches apart and expect a thin pattern siding of any kind to span the studding without sheathing and building paper, and yet give service.

The same obtains with spacing of rafters and floor joists, particularly where no sub-floor is laid, since the flooring boards cannot be expected to withstand excessive spans without rapidly depreciating.

As a matter of fact, the value of a rough or sub-floor is worth to the contractor what it might cost him, simply as a working floor to avoid the necessity of making good damage during construction to a single floor, if it is to be delivered in any satisfactory and acceptable kind of shape.

Single floors can, however, be made to serve where it is intended that a hardwood floor shall be laid later. Before buying floor covering or spending money on a soft wood floor, the comparative low cost of hardwood flooring with attendant lower cost of upkeep and floor covering should be investigated.

(c) **Exterior Finish.**—In the exterior finish of a house, quality is an important consideration. Wood has stood the test of time and it is yet the most economical finish best fulfilling all requirements.

If cost is not the main consideration, and brick, masonry or stucco finish is desired, it is only true economy to demand the best. A material should only be selected that has proven its worth, and that embodies all the good qualities of a well chosen wood siding; qualities both of material and installation, low initial cost, continued resistance to the elements, durability, insulating value, ease with which alterations may be made, and low cost of upkeep, yet maintaining at all times a sanitary, snug and cheerful home, both from within as well as in its exterior appearance.

Wood is a material we are all familiar with. It gives the maximum results at minimum cost. Its superiority is based on innate qualities. It is the "home builder's favorite." Lumber-built homes are cooler in summer and warmer in winter as borne out by impartial scientific tests.

The builders of wood can point to numberless instances of wooden siding on houses which has given good service for fifty years or more, and to many cases of durability of more than one hundred years.

The use of wood construction and finish makes possible enlargement or remodeling at minimum cost, and after all, this is an important consideration since it may be said that many of our homes are never finished. "Permanency" is as much a bugaboo as the "fire-proof" delusion. Very few indeed so-called "permanent" dwellings ever survive obsolescence. Well built lumber construction, if given the same care as other more expensive types, will last the lifetime of several generations of occupants.

From 95 to 98 per cent of all fires originate within the structures themselves, and until so-called "fire-proof" wall construction is likewise followed with fire-proof floors, partitions, doors, furniture and fixtures, there is little claim to their contribution toward a more permanent dwelling.

Much stress is laid upon the necessity of repeatedly painting wood construction. Personally, I am a paint enthusiast, for, by the simple process of painting, the beauty of a home may be entirely renewed. Those who have had experience, know that it costs comparatively little more to paint a house of lumber, than to paint the exposed frames, sash, screens, doors, cornices and trim common to other types of construction. It costs much less than to water-proof, paint and otherwise attempt to rejuvenate more costly yet less satisfactory surfaces.

I think the thought of regarding paint as property insurance, well worthy of embracing, giving truth to an old Dutch proverb: "Good paint costs nothing."

California redwood, of proper grade and quality, for siding and exterior millwork, is surpassed by no other wood. It has qualities of remarkably high rank as evidenced by literally hundreds of thousands of scientific and impartial tests conducted by the United States Forest products Laboratory located at Madison, Wisconsin, a Government institution devoted to the solution of problems affecting the perpetuation of our forests, and the use of lumber, its products and by-products.

This California product compared to all other woods, has greater durability, being equaled only by three other species.

Contrary to misrepresentation, originating chiefly among those who either wilfully or unintelligently use green lumber, unsuitable for use in any species of wood, the shrinkage of redwood from green to oven-dry condition, is in rank one, classified as "very small," in comparison with twenty-one other woods, only two of which equal it. It shrinks less than any of the white woods except the true Eastern white pine which is classified as equal to redwood in low shrinkage.

Redwood works easily and with a minimum of waste, and it "stays put." It contains no pitch or resinous substance, rendering it extremely slow burning and making a perfect base for paint, varnish and other finishes.

Mr. C. L. Weeks, Los Angeles public quantity surveyor, recently computed that the cost of siding a five-room dwelling built in this district, was but ten dollars more than if built of less durable and less desirable Pacific Coast woods. In obtaining maximum results at minimum cost, this nominal additional expenditure is most certainly justified, and does pay big returns.

(d) Roof.—The foregoing remarks on exterior finish, apply to a great extent to the roof as well, and whether the shingles selected be either cedar or redwood, I wish to recommend only that they be all-heart wood, 100 per cent vertical grain shingles of a thickness designated commercially, "five to two," indicating in thickness five shingles to two inches, measuring the shingles at the butt. Such shingles of redwood, with its superior qualities, including its recognized and remarkable slow burning peculiarity, give unsurpassed service.

The life of a redwood shingle roof is the life of the nail. It should be unnecessary to advise against the use of a ten-year nail for a redwood shingle that will last from forty to seventy years. Notwithstanding the extra labor cost of from twenty-five to fifty cents per thousand to compensate the shingler for either a sore mouth or sore fingers, occasioned, when not guarded against, by the use of such nails, it is true economy to use copper, hot dipped galvanized or zinc coated cut shingle nails, following recognized standards of laying.

(e) Interior Finish and Equipment.—The interior should be kept light, recognizing that it is more cheerful and that it is less expensive at a later date to maintain or darken the wood work than it is to make it lighter. To save cost, it is often satisfactory to simply oil the finish in the unimportant rooms, until additional funds are available.

Plaster walls while new, need not be finished elaborately. Where every dollar must work, and while walls are unsoiled, finish may be omitted in unimportant rooms.

Very desirable stain finishes that are neither commonplace nor expensive, and in fact cost no more than paint, are obtainable on redwood.

The electric wiring installation should not be sacrificed to keep down the cost. It would be far better to select cheaper fixtures that might easily be replaced later with more acceptable ones, than to omit important switches and convenience outlets for labor saving devices. With electricity as the "modern servant," these are primary considerations.

Without intimating that a lifetime's convenience and accessibility should be sacrificed by centralizing the plumbing in a house, neverthe-

less a carefully studied location of the fixtures with relation to each other and to heater, sewer, etc., may result in a genuine saving in cost of installation. Certain roughing-in may be done to provide for less essential fixtures to be installed later.

Without disregard for accepted plumbing practices or plumbing ordinances and laws, it is yet possible to decrease materially the cost of plumbing systems without sacrifice to convenience or operation.

Recent experiments by the Department of Commerce in Washington proved that plumbing costs for the ordinary dwelling may be decreased 50 per cent by using a minimum piping.

As a single instance, and yet without wishing to make a general recommendation in its favor, how many small houses having a minimum number of plumbing fixtures do you know of, wherein due consideration has been given to the possible desirability of omitting entirely all hot water piping, omitting two sets of bibbs or faucets at each fixture, substituting for a central heater, automatic or otherwise, an approved type of electrode heater requiring but a single faucet, a single supply line, yet delivering either cold or scalding hot water instantaneously with one series of pipes instead of two?

This is not a blanket recommendation, for there are items of upkeep, principally electric current consumption, to take into consideration, yet this is suggestive of but one of the various means by which, without serious sacrifice if any, installation costs may be reduced.

(f) Surroundings.—Maximum results are not obtained where planting is neglected or overlooked entirely. The value of a vine, a few shrubs, a tree or two, a simple piece or two of inexpensive lattice or fence, is too little understood or appreciated.

One of the most effective ways of producing a better home at minimum cost is to let nature make you a donation in this direction.

The Building and Loan Associations' Duty

I know of no financial institution in a better position to assist the home builder, or who has a more important service to render than the building and loan association. Self-incriminating or otherwise, I know of no other institution of equal size that is so little understood by the public.

One reason there are not more families attempting to build or own their own homes, is because of the lack of knowledge of how to proceed, or the fear to make the attempt because of this deficiency. The farm family, to whom a home means everything, is almost entirely overlooked. Home, here, is a vital controlling factor in the very life of this, our basic industry.

I think the building and loan associations should assume more responsibility, and adopt more initiative in leading the way; in disseminating reliable information on safe and sane building construction. They should definitely discriminate against inferior types of material and workmanship, and recognize and demand quality and value.

To a greater extent they should sponsor and show interest in good design and construction, offer consultation to prospective builders, and make available to them a much needed and more valuable guidance in obtaining qualified assistance. The Architectural Service Department of the California Redwood Association is but one of the many agencies that stand ready at all times to contribute in this direction.

BUNGALOW FOR MR. CHARLES HOCK, BURLINGAME, CALIFORNIA
Dickey Face Brick and Mastertile

The Small Brick House

By FREDERICK HAMILTON

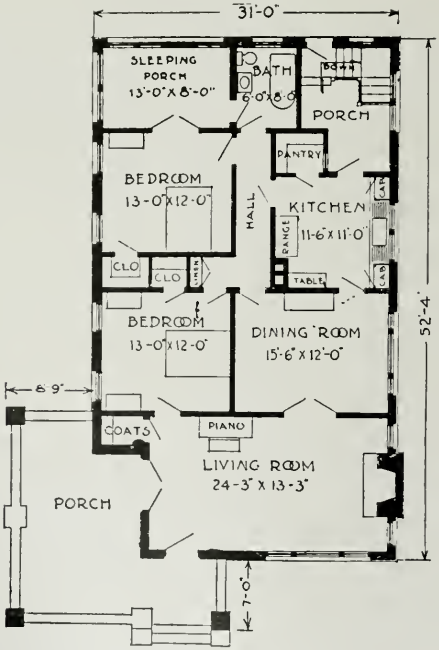
IT doesn't take an Einstein to convince us that almost everything is relative to something else. At any rate, the man who undertakes to build a small home finds it as much of a responsibility and care as if he had millions and was building a palace. To him the expenditure is sufficiently large to demand the greatest care in the selection of material as well as design. In some matters we can, with justification, exercise a very wide range of taste. In others, our judgment should be guided by considerations of genuine value and quality. In doing so important a thing as building a house there is a demand for permanence, durability, safety, and such qualities as promise economic value in return for the money expended.

Whatever may be the merits or claims of any other material, it is certain that a well-burned brick can stand the test of the qualities named. There are no changes of the weather that can affect a good brick, and history has given ample evidence that time has no power to destroy this burnt clay material. Wherever the archeologist's spade turns up the remains of long forgotten civilizations, there are found solid and enduring structures of brick.

During the past few years there has been a great advance in brick architecture, especially in the small home. The various illustrations presented in this article indicate some of the types that are being developed. The designing of a mansion or pretentious residence is something worthy of the architect's best endeavor and it is pleasing to recognize that many beautiful examples of elaborate, pretentious brick residences have been designed. The small brick house, however, presents very much greater difficulties in point of design than the larger house. It is, therefore, gratifying to note that there has been in the past few years greater attention given to this problem, with the result that very pleasing designs for the small brick house are developing all over our country.

There are a great many people who frankly express preference for the substantial and permanent character of the brick home, especially

BRICK BUNGALOW
Geo. W. Repp, Architect



PLAN, BRICK BUNGALOW

BRICK BUNGALOW, DETROIT, MICHIGAN
Ricardo D. French, Architect

A BRICK COLONIAL HOUSE IN ILLINOIS
Bernard C. Greengard, Architect

when the design and the choice of the brick color and texture give to it a great artistic charm. But they are deterred from the undertaking because they have the impression it costs too much. This is a popular mistake, due to past conditions that no longer obtain. It is very difficult to compare the cost of house building because no two houses are built exactly alike, especially in matters of interior finish and installation. The plumbing and heating equipment of two houses may differ so much as to make the houses appear to differ greatly in cost, while the houses are substantially the same, and into this difference enters all sorts of fittings and finishes. One man concludes to introduce an extra bathroom and plans for an incinerator in the cellar. He will have a clothes chute or finished attic and keep on until he has added very considerably to the house as originally planned. This certainly is very desirable but it ought not to be overlooked when questions of comparative cost arise.

Thus it is often asked, "What is the difference in cost between a frame and a brick house?" The only fair answer would be based upon two houses that were absolutely identical with the exception of the exterior walls. If such precaution is taken, it has been found again and again that a brick house does not run over 6 to 8 per cent more than the frame house. Much the same can be said in comparing the brick house and the stucco house. This statement only applies to the initial or first cost. Hence, as the life of a building extends through a long period of years, the question of cost must take in such elements as repairs and depreciation. Here is where brick catches up to and overtakes other materials that cannot endure the effects of time as well. Thus, for instance, a brick house has been appraised as suffering no depreciation whatever for the first five to ten years. After that its depreciation may be put down at 1 per cent a year, and even at that it is not the brick but the other elements in the house that suffer depreciation. Other types of houses begin to depreciate as soon as the last nail is driven and depreciate at least 2 or 3 per cent a year.

In a word, a well designed brick house gives a certain sense of substantial well being and prosperity to its entire surroundings, and for that reason real estate men are often anxious to have brick houses erected on their sub-divisions. Very often the banker will allow a better loan on a brick house. The owner will find it, if necessary, easier to sell or rent. In a word, from an economic standpoint, it makes a better investment.

When the color and texture of the brick house are properly chosen and laid in a mortar joint in exact accord with the blending of the brick color tones, and when the architect has given the structure a certain distinction of style in his design, it may be asserted that such a brick house represents a permanence and a beauty which cannot be secured by the use of any other material.

* * * *

Given Gold Medal

The gold medal of the American Institute of Architects was given to Sir Edwin Landseer Lutyens, British architect, at the convention of the American Institute of Architects and the Architectural and Allied Arts Exposition in New York, April 20.

The award was made for conspicuous service and only the sixth time it was conferred in nineteen years.

It was Sir Edwin Lutyens who designed the famous Queen's Doll House, a miniature palace presented to Queen Mary of England. He has also designed many buildings in this country, including the chapel at West Point and the Nebraska state capitol.

GARDEN VIEWS, COUNTRY HOUSE OF MR FRANK M SPENCER
Menlo Park, California

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Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer, Inc.
PUBLICATION OFFICE:
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828
The publishers disclaim any responsibility for statements made in the advertisements of this magazine.
Terms of Subscription
(Including postage) to all parts of the United States, $2.50 per annum; to Canada 75c additional; to all Foreign points $1 additional
Vol. 81 MAY, 1925 No. 2

ARCHITECTURE is the art which so disposes and adorns the edifices raised by man for whatever uses, that the sight of them may contribute to his mental health, power and pleasure.—Lamp of Memory (Ruskin).

ARCHITECTS USE THE RADIO

Last month editorial reference was made in this magazine to the advantages of using the radio as a means of disseminating knowledge to the public regarding the work of architects. The movement, it appears, has already taken definite shape in the East. According to a writer in Pencil Points, Mr. H. Van Buren Magonigle, architect of New York City, recently broadcast a short but extremely interesting talk on architecture through station WEAF. This was done under the auspices of the American Federation of Arts which has arranged for seventeen weekly talks over the radio covering a wide variety of subjects. Mr. Magonigle reports that he has received several letters, besides numerous telephone calls, expressing appreciation, from which he has gained the impression that talks on architecture interest the radio audience. As suggested in these columns last month, similar talks from Pacific Coast stations might be arranged in such a manner as to bring about on the part of the general public a wider and better appreciation of architecture, with which naturally follows a keener appreciation of the importance of the architects' services.

THE HILLSIDE HOME

Beautifully designed individual homes on hill slopes may cease to look beautiful if they happen to be in discord with their surroundings. It is therefore of utmost importance that the chief endeavor in creating hillside development is to obtain true harmony in form and color; that homes and gardens, streets and walks, walls and bridges all combine into one beautiful whole fitting perfectly to the topography of the site.

Planning hillsides for residence purposes is not exclusively an engineering problem. It is an architect's, an artist's, problem. There must be found and worked out with unlimited artistic imagination an organism with good street alignment, perfect grades and the few points the engineer considers are detail problems, as for instance hallways and stairways in a hotel building.

The landscaping, terracing and other improvements played their particular role in bringing about that admirable beauty of the old hill towns.

Some critical visitors to Southern California have complained that when the builders have finished with it the country will be an architectural nightmare. Yet often these critical newcomers will insist upon putting up cold-country houses which are not appropriate to their surroundings in outline,

material or color. An English type village, for example, is a lovely thing in its proper location, as witness Frost Hills, Long Island, with its red brick houses and cherry tile roofs against the snow; but they are distinctly snow-country dwellings, the steeply sloping roof being invented precisely for the purpose of shedding snow. The temptation to imitate or reproduce medieval styles is one to which many hillside builders have yielded, the small towers and turrets with their slits of windows making much waste of space and picturesque inconvenience.

But our hillside development must reflect California and there is inspiration in the Mediterranean countries whose extant historic style is remarkably adaptable to modern requirement. The more so, indeed, as our relation to the garden and nature has little changed and the climate and topographical characteristics are much like those which prevail along the Mediterranean shores.—FRANZ HERDING.

INSTITUTE SHOULD ADVERTISE

The time may never come when it will be expedient or proper for individual architects to attempt any extended program of educational-advertising. But the time is here when the American Institute of Architects could well give the public most valuable and resultful service in this direction.

And what wonders could be performed in making the advertisements as beautiful in appearance as the text is constructive in thought and emotional value! What illustrative and decorative opportunities belong to them by right of their professional labors! Here would be no straining to make an appearance, no dragging in of backgrounds and extraneous properties. All the world may love a lover at certain times and under certain conditions, but all the world loves a beautiful home all the time.

Artist and copy writer would find the preparation of educational advertisements on architecture a golden age for them. Palace and cottage, interior and exterior, the whole scope of the emotions, the whole scope of pictorial treatment —all are available to those who would create the appeals.

The ultimate of results which would accrue from such a program may not be set down. They are beyond computation, is the prediction of Amos Stone in a fine article on the subject, in Printers' Ink. That a new and great era in home building would follow is certain. That architects would be invited to give expression to the full sway of their genius is likewise certain, Mr. Stone thinks.

People want good architecture. The instinct for beauty may be crude, but the cultivation of an appreciation of finer things, when the proof may be offered in pictorial form, is not a slow process.

When architects inaugurate a national program of educational advertising they will be starting a national movement in which the building trade and real estate interests will give them noble support. They will be encouraging a solid prosperity based on an increase in national happiness.

CONTRACTORS SHOULD USE PLANS

The reputable building contractor performs useful, valuable and indispensable service—as a contractor. But when it comes to designing and preparing adequate plans—the task is unquestionably one for the architect. Adequate plans mean more than a mere floor plan and specifications that are so often generalities. The more carefully and completely the plans are worked out, the most satisfactory that home is bound to be. No matter how competent, experienced, and honest a builder is, he is going to build a better building

(Concluded on page 138)

With the Architects

Building Reports and Personal Mention

Bank Buildings

Plans have been completed by Architect W. H. Weeks of San Francisco for a one-story brick and terra cotta bank building for the First National Bank at Red Bluff, estimated to cost $80,000.

Plans are being prepared by Architects Bakewell & Brown for a Class A branch bank building estimated to cost $100,000. The exterior will be of granite.

Architect Edward T. Foulkes has completed plans for a one-story reinforced concrete branch bank building to be erected at 40th street and San Pablo avenue, Oakland, for the American Bank.

Plans are being completed by Architect W. H. Ratcliff, Jr., of Berkeley, for a twelve-story Class A store and office building at Shattuck avenue and Center street, Berkeley, for the Mercantile Trust Company. Mr. Ratcliff has also completed plans for a branch bank building for the same institution on College avenue in the Elmwood District.

Architect Gunnison Busy

New work in the office of Architect William F. Gunnison, 57 Post street, San Francisco, includes a five-story and basement reinforced concrete apartment house at 20th and Valencia streets, San Francisco, for Messrs H. G. and E. H. Norman, and estimated to cost $175,000; a reinforced concrete tabernacle on Ellis street to cost $125,000; a five-story Class C hotel and a two-story frame residence on Chestnut street, San Francisco, for Mrs. A. Schurman.

Community Apartment House

Architects Hyman & Appleton, 68 Post street, San Francisco, are preparing plans for a ten-story and basement reinforced concrete community apartment house to be erected at Laguna street and Pacific avenue, San Francisco, for E. Tropp & Associates. There will be two hundred rooms. The building, which will cost $500,000, will be financed by a bond issue offered by the S. W. Straus Company.

Providence Hospital, Oakland

Plans have been completed by Architect R. A. Herold, of Sacramento, for the new Providence Hospital in Oakland. Bids have been submitted, the two low figures being offered by Schuler & MacDonald, of Oakland, at $475,000 and R. W. Littlefield, for $506,000.

Baumann & Jose Busy

New work in the office of Architects Baumann & Jose, 251 Kearny street, San Francisco, includes a $50,000 store and apartment building at 38th avenue and Balboa street, for Mr. Jacob Weisbein; a $30,000 brick veneer apartment house at Presidio avenue, for L. Solomon; a three-story $60,000 apartment house at California and Middle streets, for Mr. I. Epp; a three-story frame residence on Powell street, between Pine and California streets, San Francisco, for Mr. F. J. Rocca. A notable feature of this house is the fact that it will have a frontage of but 13½ feet.

Winners of House Competition

The "All-Wood House Competition" conducted by the California Redwood Association recently, resulted in the following awards: First prize to Mr. L. B. Miller, in the office of Willis Polk & Co., San Francisco; second to Mr. R. D. MacPherson, Los Angeles; third to Mr. James C. Sims, Los Angeles, and fourth to Mr. W. G. Byrne, Hollywood. The designs were for homes costing between $3000 and $7500. The outside walls and roof are to be of California redwood.

Passing of L. M. Turton

Mr. L. M. Turton, Napa architect, died in that city April 27 following an illness of two years' duration. Mr. Turton was a native of Nebraska. He came to California in 1876 and was graduated from the old Collegiate Institute in Napa. Later he studied architecture in San Francisco. He was 62 years of age. Many business buildings and residences in Napa county were designed by Mr. Turton.

High Class Residences

Architect Joseph L. Stewart has completed plans for a group of six high-class homes, construction of which has been started in Crescent Park, Palo Alto, for Mr. J. K. Calley. These houses will cost from $20,000 to $25,000 each. Mr. Stewart has also prepared plans for a one-story factory to be built on Mission street, near 10th, San Francisco, for Mr. David Devoto of Santa Rosa.

Addition to Palace Hotel

Plans have been completed by Architect George W. Kelham for a one-story addition to the Palace Hotel. It will be built on the roof and will provide executive offices for various officials of the hotel.

Los Angeles Architectural Club Notes

A comfortable drafting room has been provided the Atelier of the Los Angeles Architectural Club at 420 S. Spring street, through the courtesy of the Allied Architects Association of Southern California.

The last Senior program of the club Atelier was "A Municipal Auditorium for the City of Los Angeles, to be located in the proposed Administrative Center." Mr. Harwood Hewitt acted as patron. During the current month the Seniors under Mr. Sumner M. Spaulding as patron, will design "A Country Villa."

The Juniors, under the guidance of Mr. A. C. Zimmerman, have just completed the design of a Junior High School. The results were excellent. The new Junior problem is to be "A Salt Water Pumping Station at Santa Monica." This interesting and unusual problem is to be given by Mr. Lloyd Rally.

During the month Mr. Myron Hunt spoke to the student body at the University. His subject was "The Development of the Garden." The lecture was profusely illustrated by colored slides.

Mr. Jesse E. Stanton, director of the club and always active in its affairs, has joined the executive forces of Gladding, McBean and will go abroad in the interests of the Tropico Potteries branch of the Gladding, McBean Company.

The amount of small home building is enlarging daily, and there is a great opportunity for the small home designer to increase his fame by submitting sketches to the Small House Plan Service, located at 600 Metropolitan building, Los Angeles. Two types of homes are wanted. One to cost about $3000 and consisting of a living room, kitchen, breakfast nook, two bedrooms and bath. Another type of house which is most popular is one of two bed-rooms and bath, a den which can be used as a bedroom if necessary, living room, dining room, and kitchen.

Architect Retires

Mr. M. V. Politeo, one of the pioneer practicing architects in San Francisco, announces his retirement from active practice. Mr. Politeo was formerly a member of the firm of Cunningham & Politeo which did a flourishing business prior to and following the fire of 1906. Since the death of Mr. Cunningham, Mr. Politeo has maintained offices in the First National Bank building, San Francisco.

Swimming Pool

Emerson Knight, landscape architect, 9 Geary street, San Francisco, has completed plans for a swimming pool for Max M. Cohn's estate, "Little Brook Farm," at Los Gatos, California. The pool will be in the form of a true ellipse, and 25 by 50 feet in dimensions.

Personal

Architect James T. Narbett of Richmond, left for New York April 16 to attend the annual convention of the American Institute of Architects. Mr. Narbett went as a delegate from the San Francisco chapter. He returned home early in May.

Mr. L. L. Dougan, formerly of the firm of Houghtaling & Dougan, architects, Gearin building, Portland, Ore., has established offices at 309 Western Bond and Mortgage building, Portland, Ore.

Messrs. Elwin P. Norberg and C. E. Norberg, architects, announce the removal of their offices from 704 Union Bank building to 1144 S. Grand avenue, Los Angeles.

Architect Howard Schroder, formerly located at 357 Twelfth street, Oakland, has moved to larger quarters at 354 Hobart street, Oakland.

Mr. Louis E. Korn, architect and engineer, announces the removal of his offices from 988 North Western avenue to 910 and 911 Financial Center building, 7th and Spring streets, Los Angeles. Manufacturer's literature, catalogues and samples are desired.

Passing of Mr. S. H. Kent

Mr. S. H. Kent, many years ago president of the San Francisco Builders Exchange, died March 22 at the Masonic Home, Decoto, Alameda county. Mr. Kent had been in failing health for sometime. He was past eighty years of age. Mr. Kent was one of the first subscribers of The Architect and Engineer and had been a constant reader of the Magazine for twenty years. In her letter to the editor, announcing Mr. Kent's death, his widow, wrote: "He always enjoyed reading The Architect and Engineer and usually laid other publications aside when it was received."

Theatre Contract

Architect Mark T. Jorgensen, 110 Sutter street, San Francisco, has let a contract to James L. McLaughlin to build a new theatre at Stanford and San Pablo avenues, Oakland, for the Golden Gate Realty Corporation.

Plans have also been completed for a theatre in Oakland, in the office of Architect A. A. Cantin, Flatiron building, San Francisco. This playhouse has been designed in the Egyptian style and will be erected at Fruitvale avenue and Hopkins street for the Bay District Theatres Company.

College and Hospital Buildings

Architects Shea & Shea are preparing plans for a group of college and hospital buildings to be erected on the block bounded by 21st, 22d, Q and R streets, San Francisco, for the San Francisco Drugless Hospital. Cost is estimated at $500,000.

Architect Offers Advice to Millowners

Architect E. J. Borgmeyer of Los Angeles, recently addressed the Millwork Institute of California on "How You May Better Serve the Architect and Owner". Here are the salient points of his talk:

The chief causes of trouble I have experienced with planing mills are:

1. Promises of delivery are not always honestly made and too often jobs are unreasonably delayed.

2. Trouble with doors. Outside doors and garage doors should not be glued, but doweled and nailed. Some mills persist in sending out glued doors for outside work.

3. Glass in sash should be back puttied. I have had considerable trouble with driving rains going through puttied glass.

4. Mills should standardize on mouldings and co-operate with the architects in getting good lines.

From my own experience I feel that No. 1 should be stressed. I have had few jobs during the last six or seven years where what seemed an unnecessary delay did not come from failure to receive millwork when needed. I grant that the indictment must also rest on the shoulders of contractors who are inclined to do shopping, or who fail to place their orders in time, and upon architects, too, who fail to deliver complete plans and full-size details on time. Ways and means should be found to overcome this fault in the system; at least, a definite date of delivery should be given by the mills based on delivery of details and information.

Time was when inaccuracies in measurements in millwork caused us much trouble, also when liberties were taken with contours of moulding; but of late we have had little trouble along these lines. We still believe that failure to deliver kiln-dried stock is too prevalent. It's a pity that we cannot at least work out some system in which the legitimate operators are officially recognized. Certainly a mill taking a contract to deliver kiln-dried stock is getting money on false pretenses if it does not do so, and it is doing legitimate business and the reputation of the architect involved much harm. Lack of standards in presentations and in specifications are serious handicaps, though easily overcome if the right basis of co-operation between architect and mill men is established.

I regret that we still find some mills substituting 16-ounce glass for best 21-ounce.

AA selected as specified, explaining perhaps why competitive figures are so varied.

The low bidder does not always deserve the job under existing methods. How much easier and fairer would the competitive system be if business morality was such that the bidder always deserved and got the job.

We recognize as architects the value to your group of stock business, though we dislike to see it dominate or crush out the special work. In much of our work we would use stock if the mouldings and design were to our liking and we were furnished with full information, which, I understand, your association is now doing, and which innovation will be very much appreciated by the architects.

Engineers' Registration Laws

The California State Legislature has passed a new general law providing for licensing of engineers by a board of five engineers to be appointed by the Governor and who have had at least twelve years' experience. A registration fee is to be charged each engineer. The measure was introduced by Assemblyman Robert B. McPherson of Vallejo.

The bill has not yet received the signature of the Governor but he is understood to be favorable to it.

The enactment of engineers' registration laws has been considered by the 1925 legislatures of various other states, and while results have not been all that could be desired, nevertheless a goodly number of states and territories have some form of registration or licensing law in effect. They include:

Alabama, Arizona, Arkansas, Colorado, Florida, Idaho, Illinois, Indiana, Iowa, Louisiana, Michigan, Minnesota, New Jersey, New Mexico, New York, North Carolina, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Virginia, West Virginia, Wyoming, Dist. Columbia, Hawaii.

Reduce Cost of Steel

An amendment to the building laws of San Francisco which, it is declared, will save 10 per cent on the cost of steel in steel-frame buildings, has been approved by the Supervisors' building committee. The amendment increases the allowed stress, permits of cutting down the amount of steel by 10 per cent and will greatly increase steel-frame building in San Francisco.

Annual Convention

The forty-eighth annual convention of the National Electric Light Association will be held in San Francisco, June 15-19. The sessions will be held in the Exposition building and the program, in addition to reflecting the varied activities of the association, will embrace many outstanding features of value to the industry.

Uniform Building Code

A uniform building code for the East-bay cities, designed to govern construction of residences, is to be ready for adoption by the various municipalities about July 1.

CONTRACTORS SHOULD USE PLANS

(Concluded from page 135)

for the money with detailed plans prepared by an architect.

Most of the average owners' dissatisfaction with their homes, and friction with the builders, is due to the very unbusiness-like method of starting out to build with hastily prepared sketches, or from the outline plans of stock books. It is often an easy way to get a job, but very poor policy in the long run for the builder. Any building put up without expertly drawn plans pays the equivalent either in diminished value or by increased cost of the building.

Roof and Waterproofing Problems

The Best Is None Too Good in Roofing

By J. I. HOLDER, Director of Engineering Department
of The Paraffine Companies, Inc.

This article is written at the request of a number of architects who, although recognizing that "the best is none too good in roofing", find it a difficult task to convince their clients of the vital importance the roof plays in the success of the structure as a whole. The client all too frequently fails to remember that homely old adage, "We receive only what we pay for".

STARTLING and incredible seems the statement that "more money is spent for repairs and consequent damage caused by leaks in roofing than the initial cost of the roofs." Admitting that the statement is overdrawn, nevertheless, it is true that an appalling amount of trouble and expense is due to poor materials, poor workmanship, and damage to the roof after it is applied.

Minimize as you may the importance of the roof; yet it stands as a monument of pride or failure upon which the whole structure is frequently judged. Is there anything more exasperating than continued calls from a client that "my roof leaks"—("leaks like a sieve" is the way he usually puts it)? "It's the flashings"; "it's the walls"; "it's the outlets", and a number of other "its" characterize the reasons for trouble; and it may be one or all of them. A succession of rains followed by an equal number of repairs and the roof is at last "fixed" after a certain amount of damage has resulted to the building or its contents, or both.

All of this is not entirely due to the roofing contractor. Frequently he completes his job in an efficient and watertight condition. What happens after he leaves the job is a "series of crimes" attributed to the roofing material or workmanship. Boards with nails are thrown on the roof, flashings are dislodged, acids are spilled, glass and all sorts of sharp pointed articles and tools are carelessly strewn around and walked over; holes are cut for pipes, openings are made for one purpose or another, signs, flagpoles, radios and other paraphernalia are erected, every one a potential leak. These are just a few things that happen. There are many others.

Because of this abuse after the roof is applied many architects and engineers are finding that it pays to spend a few dollars more per square and employ the use of the highest grade materials and most efficient workmanship, and above all have the roof finished with a heavy flood coat of asphalt and gravel or crushed material of some character, using a generous supply of the gravel as a protection or wearing surface. Gravel is the greatest protection known to man against the "man" abuse to which the roof is subjected and the destructive elements—the rays of the sun and snow and ice. Not only does gravel function as a wearing and protecting surface, but it acts as a fire retardent, instantly taking the roof out of the fire hazard class and placing it in Class A construction carrying the base or lowest rate of fire insurance.

Again because of the abuse to which the roof is subjected a strong high grade roofing (the best is none too good) is essential to successfully withstand the "pull" of expansion and contraction, the settlement of the building, the shrinkage of lumber if the building is of wood, or if of concrete the cracks or fractures which so frequently occur. Ordinary saturated felt, even if built up in 5-ply construction, is often taxed beyond its limitations of strength and succumbs to the use and abuse to which it is subjected by these causes. For this reason ordinary saturated felt is fast being supplanted by high grade roofings in built-up roof construction, together with the fact that roofing is a far more fool proof material (being waterproof and weatherproof in itself and of itself) than ordinary felt which is only a saturated material carrying no coatings and is not a waterproof or weatherproof sheet.

Then too the asphalt is an important factor. Again the "best is none too good in roofing." The asphalt is the life of the roof. Upon it depends to a large extent the durability or lasting qualities of the roof. It must have the physical characteristics to withstand both heat and cold and be able to expand and contract with the weather without damage to itself or to the roofing.

It has been said that at least 75 per cent of the success of a good roof is due to workmanship. This may or may not

be exaggerated. Workmanship, however, is not the only factor controlling durability. It does not entirely keep roofs from cracking or checking. It is not alone responsible for wrinkles or buckles or pockets, although it plays a most important part in these and other roof troubles. For this reason "inspection by the manufacturer" during application is one of the surest methods of obtaining certain definite results. The variety of things that can be wrongly done are legion. Here are just a few: Substitution of cheaper grades of materials; dilution of asphalt with a thinner; insufficient nailing, causing slippage of material, or roofing blowing off under normal winds; improper distribution of asphalt between the layers of roofing due to old or worn out mops, or asphalt too cold, or because of unskilled workmen; overheating of asphalt, causing "burns" (which later develop into "sore spots") and materially shorten the life of the roof and cause leaks; dirty or dusty gravel or wet gravel which will not properly imbed in the flood coat of asphalt; too small gravel, which has a tendency to wash to low spots in the roof; poor connections around outlets, causing leaks; poor pointing of counter-flashings, using plaster instead of good rich cement mortar; insecure counter-flashings, not properly wedged; etc., etc. The inspector must necessarily be ever on the alert to see that these and countless other things that contribute to leaks and shorten the life of the roof do not happen.

One might arrive at the conclusion that all this is done at a prohibitive cost, but such is not the case. The initial cost of high grade materials is little more than the poorer grades—ultimately they are the cheaper. The most efficient and responsible workmanship is little in excess of the cost of the "cheap roofer"—ultimately, it is the cheapest. The inspection is absorbed by the manufacturer who knows that every high class roof where his materials are employed is a monument of good will and confidence which cannot fail to react in his favor in the years to come.

Too much praise and encouragement cannot be given to the roofing contractor who has built up his organization of workmen with the idea of thoroughness and care in mind in the execution of his contracts. To him the greatest credit is due. His bid is usually high, and rightfully so, for he puts into his roof all his experience and brains, and employs careful, skilled workmanship.

Yes, "the best is none too good". There may be other parts of the building that are important; the foundation admittedly so; but what other part of the building carries so much responsibility as the roof? In the last analysis the building itself and all its contents depend upon the roof for its protection, for its shelter, for, yes, its success as a building. It was recognized in the beginning of all things that "the building was built for the roof". Man's first conception of shelter and protection—a roof. Later, when building became modernized and the use of bitumens employed as roofing materials, the importance of the roof again took precedence over all other parts in the form of a guarantee. Are other parts of the building guaranteed and maintained for ten and twenty years as is the roof?

There is one safe and sure way to obtain roofing satisfaction and that is to recognize that price almost universally governs quality; that the **high** bidders in roofing have the **faithful** performance of their contracts at heart; that a dollar saved in roofing is a dollar thrown away; that, in the first and last analysis, no matter how it is figured, be it ever remembered "The best is none too good in roofing."

Plea for Better Fixtures

Editor The Architect and Engineer,
San Francisco, Calif.

Sir: The writer has visited a great many homes and flat buildings recently erected in the better class residence districts in San Francisco and was greatly surprised to notice the cheap type of electrical fixtures installed in otherwise well planned homes. Architects, contractors and builders evidently do not seem to realize the full sales value of attractive lighting fixtures. Mr. B. J. Wildman, a recognized authority in lighting fixtures, recently addressed a letter to architects, contractors and builders in which he recommends allowance of at least 3 per cent of the total cost of the home for electric lighting fixtures.

This allowance appears to be fair, and in most cases, if the allowance is less than 3 per cent, the lighting fixtures are usually below the standard of the rest of the house, with the result that the entire appearance has been marred. Architects and builders should adopt this standard allowance for, after all, the lighting fixtures, built-in accessories and other materials that readily appeal to the eye of the buyer of the house, really increase the value of the building. A READER.

In Philadelphia

Mr. Armand Carroll, formerly with Architects Wolfe and Higgins of San Jose, is now associated with Architect W. H. Lee of Philadelphia, Pa. In a recent letter to the editor Mr. Carroll writes: "Being a Californian, I feel I should be in touch with the work that is done on the Pacific Coast, and am enclosing check for one year's subscription."

Architects' Directory

A new Directory of architects, mechanical and structural engineers, has just been issued by the publishers of The Architect and Engineer. The Directory is for the entire Pacific Coast. Copies may be had at this office at $2.50 each to advertisers and $5.00 to non-advertisers.

Recent Work of Robert H. Orr, A. I. A.

The ARCHITECT & ENGINEER

JUNE 1925

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Published Monthly by
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FIRST CHRISTIAN CHURCH, STOCKTON
ROBERT H. ORR, ARCHITECT

Frontispiece
The Architect and Engineer
June, 1925

THE
ARCHITECT
AND
ENGINEER

JUNE
1925

VOL. LXXXI
No. 3

Some Recent Work of Robert H. Orr, A. I. A.

By CLYDE A. PAIGE

IT has been said "Architecture is the printing press of all the ages, and gives a history of the state of society in which it is erected." The truth of this statement becomes more and more apparent to those engaged in the architectural profession as they scan through the current architectural magazines and compare the illustrations with those of some ten, twenty or thirty years ago in our architectural history.

At this point it seems fitting to commend the unbiased, progressive and well wishing publishers of the many current magazines who are devoting their publications to the promotion of architecture in its proper setting in the complex activities of the present social order. These men are performing in a similar manner, educational work that is bringing society at large into a frame of mind to understand the real value of professional architectural advice and assistance in erecting structures of character.

One must also mention the forward looking publications of the various manufacturing companies which are vitally connected with the building industry. An outstanding example, is the recent illustrative work done by one of the largest brick manufacturing concerns of Southern California. This company has gone to unlimited trouble and expense to produce the best possible collection of architectural examples showing the use of brick as a building material. These publications did not so much stimulate the use of brick as a medium of architectural expression as they cause prospective builders to realize that all building should be an expression of the thought of the time in so far as material and expenditure will allow.

In the above paragraphs we have voiced our approval of what man has set down on paper concerning the science of building. However, a truer publicity is being produced daily through the medium of architecture, a publicity worthy or unworthy, as the architect has builded well or ill. These visible expressions are produced on what we may call the "Press of Architecture."

This "Press of Architecture," is silently exhibiting the story of the awakening of laymen to the fact that a well planned, thoroughly utilized building can be a warm embodiment of proportionate beauty, suitably clothed with vestments of attractive finery, which accentuates the true relation between the constructive and the ornamental.

Concurrently this same press is daily relating, in words of stone, brick and concrete, many stories that are not altogether pleasing either to the professional designer or to the serious minded, art loving layman. Such a condition is distressing because it requires ages to overcome the false ideals set up and to eradicate the harm produced. Misinterpretation of the real science, art and purpose of producing the beautiful and the practical in architecture, is the outgrowth of these false stories which are constantly forced upon our attention. Many of these misinterpretations have been made by architects. Yet we must realize that architects have been, and are, only human, that they are subject to error in their interpretation of society's desires, that they try to give to society what it wants rather than what it needs. Such a condition is possible, because at the present time society is not in full control of its own emotions. On the other hand architecture is the art of building beautifully, architects are experts engaged in that art, and it is there-

CALIFORNIA CHRISTIAN HOME, SAN GABRIEL
Robert H. Orr, Architect

fore their sacred obligation to guide the layman in his choice of a structure which justifies its right to exist in point of cost, utility and dignity.

Cognizant of the foregoing facts, Mr. Orr, in his advice and architectural assistance to the particular groups of society with which he has labored, has striven at all times to give the interpretation that will express the highest aims and purest emotions of the present trend of society. This he has endeavored to accomplish with as much freedom from the "Sins of the Architect" as possible. Therefore, being guided by the "Seven Lamps of Architecture," in so far as it is possible in a material age, he has engaged himself in producing first of all, buildings strictly utilitarian as to plan and as monumental in design as each particular commission permits.

He has sometimes been referred to as an ecclesiastical specialist, and he modestly enjoys such reference. While the great proportion of his work is for the various church denominations, he still finds time to engage in the design of other types of work such as schools, jails, commercial buildings, religious educational plants, modern hospitals and residences.

Some of the outstanding examples of Mr. Orr's ecclesiastical work are found in the Glendale Presbyterian church and the still larger Wil-

shire Boulevard Christian church which latter edifice has just been started. This structure is designed to encompass artistically a plan layout that has been created to take care of the complicated demands of the spiritual, educational and physical departments of a church, thoroughly departmentalized along the latest ideas in religious institutions. It is situated on one of the busiest thoroughfares of the Southland where its commanding position exhibits a silent sermon to man. With this point in mind, everything has been done to present a message in form that will inspire the passer-by as well as the worshipper within, with the thought that there is a supreme spirit prevailing over the acts of man.

Attention is called to the group of buildings of the California Christian College herein illustrated. This group forms the first unit of an extensive construction plan which is to provide housing space for dormitory, social, physical and scholastic activities of an ever increasing student body. Some of the more important units of the complete group are still to be conceived.

One of the recent buildings of special mention is the Hollywood Hospital, a fireproof, thoroughly equipped and modernly controlled hospital that is attracting considerable attention from those interested in such structures.

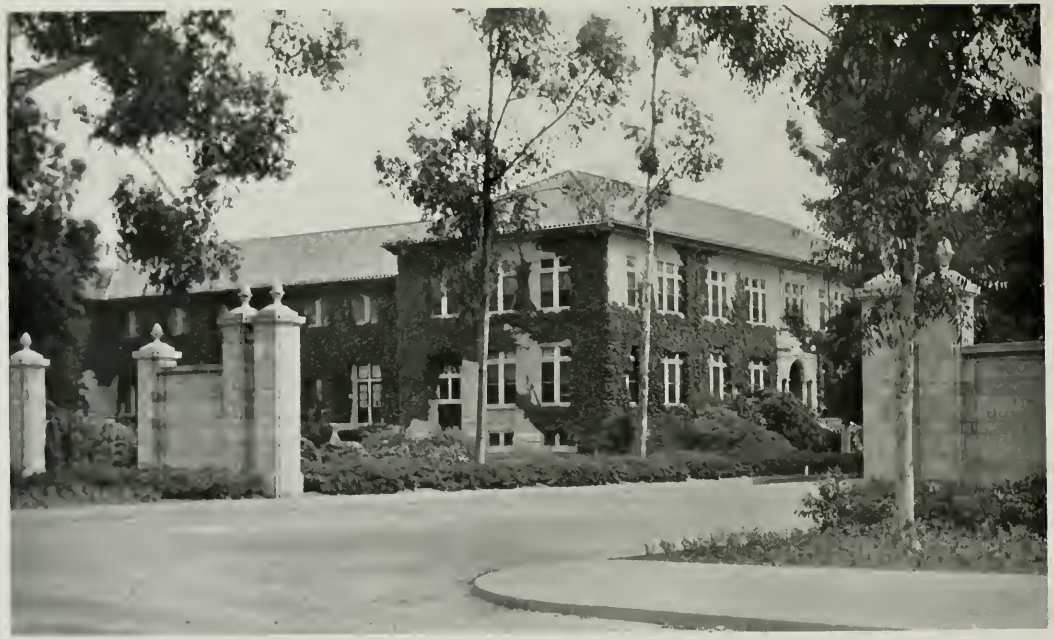
ELEVATION, CALIFORNIA CHRISTIAN COLLEGE, LOS ANGELES
Robert H. Orr, Architect

Of the strictly educational type, the Zoology Laboratory building erected for Pomona College, Claremont, is one of the latest and best productions of Mr. Orr. Designed in harmony with the prevailing style of architecture used on the campus, this structure lends itself very suitably to the purpose intended. Many small churches ranging in cost from fifty thousand to one hundred and fifty thousand dollars which Mr. Orr has designed recently tell their own story of the growth of the religious bodies for whom they are built and at the same time give his idea of the trend of church design.

It is evident from the work here exhibited that Mr. Orr uses as his principal mediums of color and texture for expressing his ideas, the time honored friend of the architect, stone and brick. He feels personally, that these materials lend themselves best to the architectural effects he desires in his edifices. Yet he has always kept in mind the relation between the climatic, the geographic and the financial conditions relative to which material should be used, to print truly the story of the ambitions of the erectors.

Space does not permit a detailed description of the work illustrated. And too, as someone has said, "The greatest thing in the world is not what you do but what you become in doing it."

HOTEL FOR CHAPMAN BROS. CO., LOS ANGELES
ROBERT H. ORR, ARCHITECT



HOLMES HALL, POMONA COLLEGE, CLAREMONT, CALIFORNIA
J. P. JAMIESON, ARCHITECT
ROBERT H. ORR, SUPERVISING ARCHITECT

CROOKSHANK HALL, POMONA COLLEGE, CLAREMONT
ROBERT H. ORR, ARCHITECT
JAMIESON & SPEARL, CONSULTING ARCHITECTS

CROOKSHANK HALL, POMONA COLLEGE, CLAREMONT
ROBERT H. ORR, ARCHITECT
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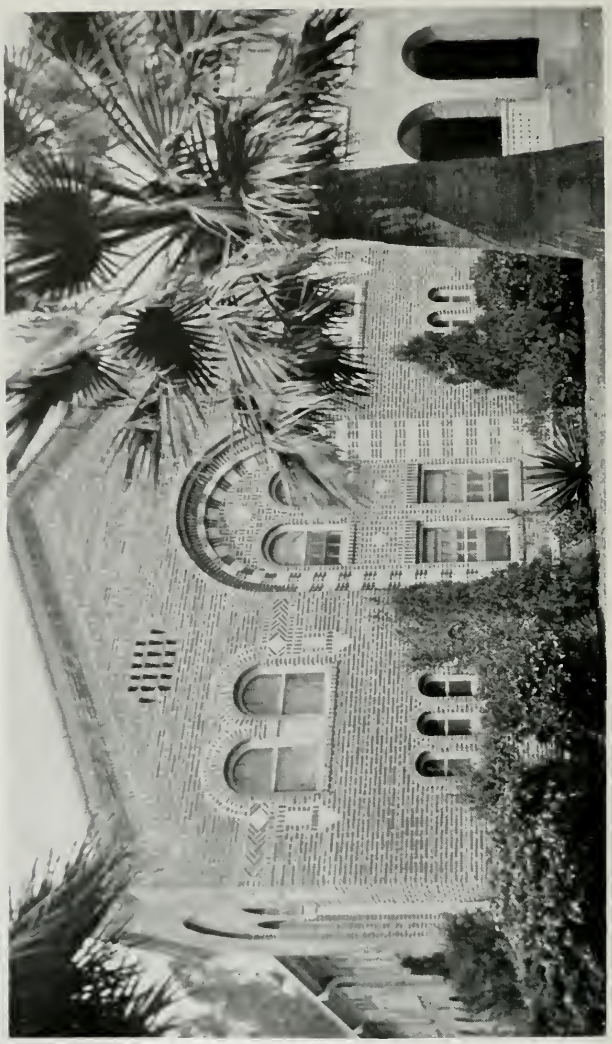
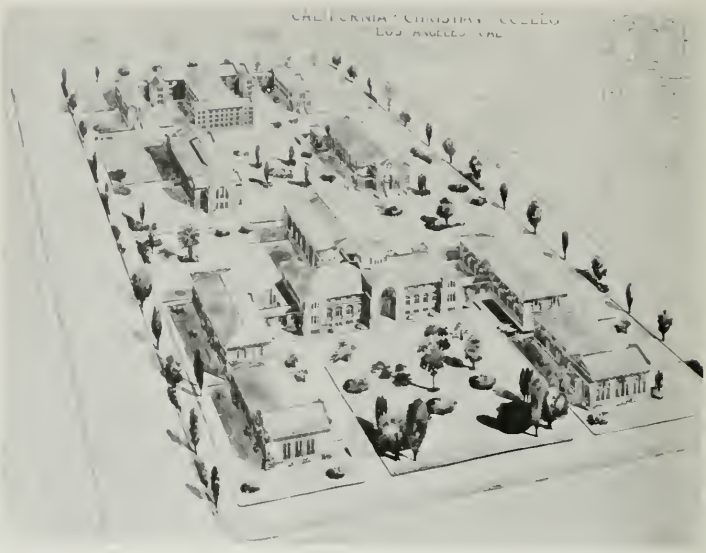


BOYS' DORMITORY, CALIFORNIA CHRISTIAN COLLEGE, LOS ANGELES
ROBERT H. ORR,
ARCHITECT

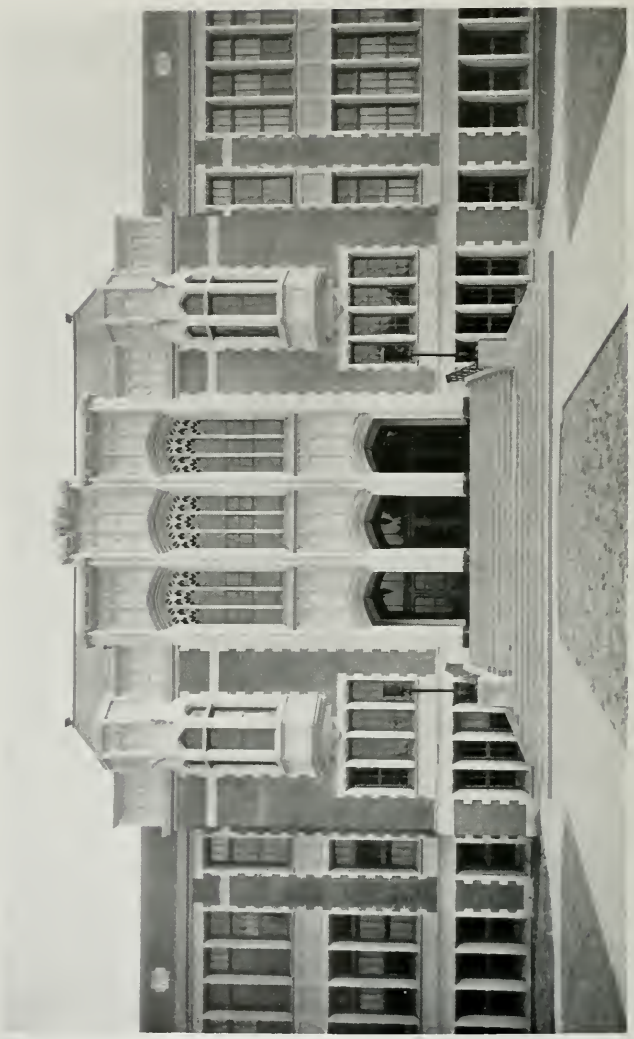
GIRLS' DORMITORY, CALIFORNIA CHRISTIAN COLLEGE, LOS ANGELES
ROBERT H. ORR, ARCHITECT



GROUP PLAN, CALIFORNIA CHRISTIAN COLLEGE, LOS ANGELES
Robert H. Orr, Architect

PROSCENIUM ARCH, POMONA HIGH SCHOOL, POMONA
W. H. Weeks and Robert H. Orr, Associated Architects

POMONA HIGH SCHOOL, POMONA, CALIFORNIA
W. H. WEEKS AND ROBERT H. ORR, ARCHITECTS

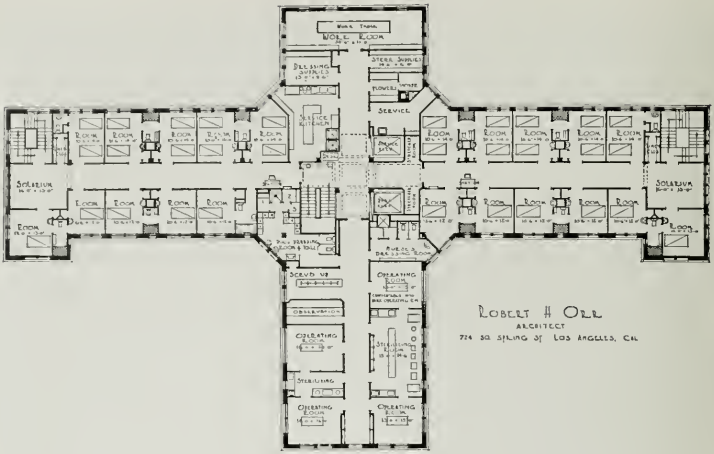


POMONA HIGH SCHOOL, POMONA, CALIFORNIA
W. H. WEEKS AND ROBERT H. ORR, ARCHITECTS

HOLLYWOOD HOSPITAL, LOS ANGELES, CALIFORNIA
ROBERT H. ORR, ARCHITECT

HOLLYWOOD HOSPITAL, LOS ANGELES
ROBERT H. ORR, ARCHITECT

ENTRANCE STAIRWAY HOLLYWOOD HOSPITAL.
ROBERT H. ORR, ARCHITECT



HOLLYWOOD HOSPITAL, LOS ANGELES
ROBERT H. ORR, ARCHITECT

FIRST PRESBYTERIAN CHURCH, SAN FERNANDO
Robert H. Orr, Architect

FIRST PRESBYTERIAN CHURCH, SAN FERNANDO
Robert H. Orr, Architect

MODEL, WILSHIRE BOULEVARD CHRISTIAN CHURCH, LOS ANGELES
Robert H. Orr, Architect

WILSHIRE BOULEVARD CHRISTIAN CHURCH, LOS ANGELES
Robert H. Orr, Architect

ONTARIO CHRISTIAN CHURCH, ONTARIO, CALIFORNIA
ROBERT H. ORR, ARCHITECT

INTERIOR, ONTARIO CHRISTIAN CHURCH, ONTARIO
Robert H. Orr, Architect

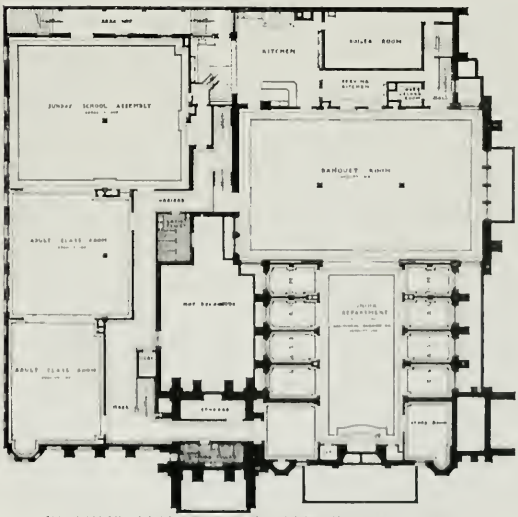
FIRST CHRISTIAN CHURCH, SANTA MONICA
Robert H. Orr, Architect

FIRST CHRISTIAN CHURCH, WHITTIER
Robert H. Orr, Architect

HOLLYWOOD M. E. CHURCH SOUTH
Robert H. Orr, Architect

GLENDALE PRESBYTERIAN CHURCH, GLENDALE
ROBERT H. ORR, ARCHITECT

INTERIOR GLENDALE PRESBYTERIAN CHURCH
Robert H. Orr, Architect



BASEMENT PLAN, GLENDALE PRESBYTERIAN CHURCH
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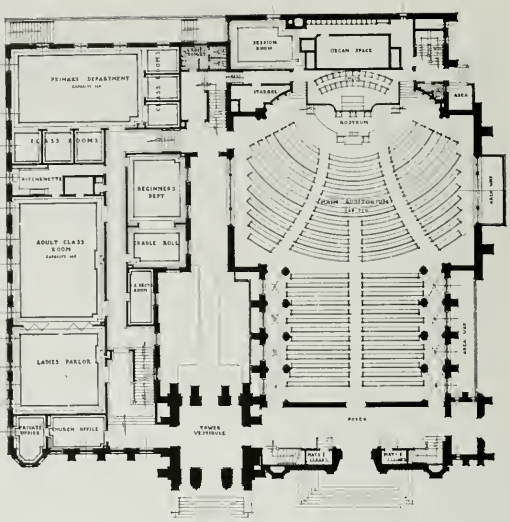
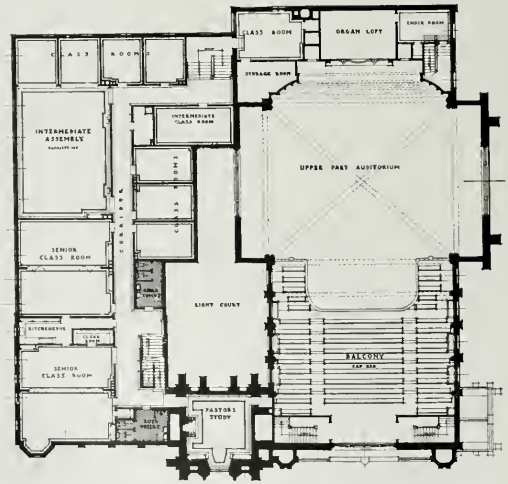


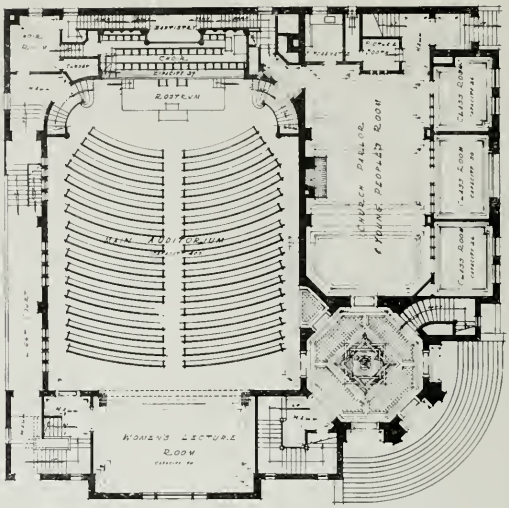
FIRST FLOOR PLAN, GLENDALE PRESBYTERIAN CHURCH
Robert H. Orr, Architect



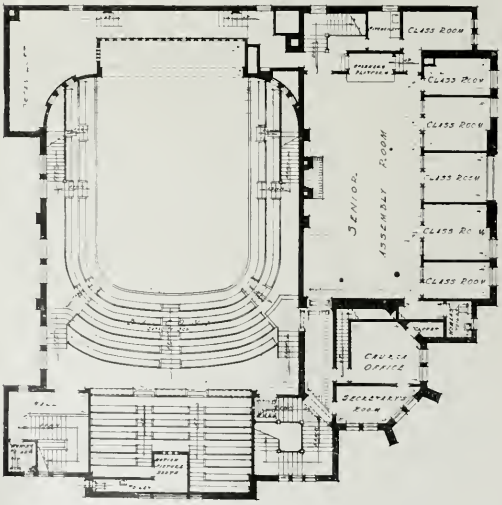
BALCONY FLOOR PLAN, GLENDALE PRESBYTERIAN CHURCH
Robert H. Orr, Architect

FIRST CHRISTIAN CHURCH, STOCKTON
Robert H. Orr, Architect

BASEMENT PLAN, FIRST CHRISTIAN CHURCH, STOCKTON
Robert H. Orr, Architect



FIRST FLOOR PLAN, FIRST CHRISTIAN CHURCH, STOCKTON
Robert H. Orr, Architect



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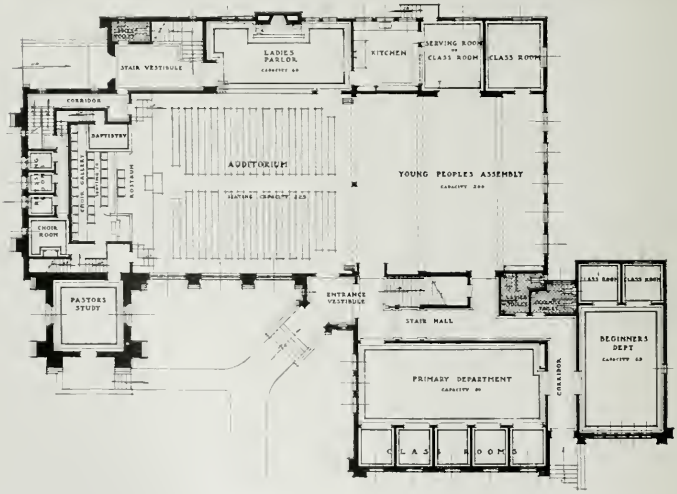
CALVARY BAPTIST CHURCH PASADENA
ROBERT H. ORR ARCHITECT

FIRST BAPTIST CHURCH, SAWTELLE, CALIFORNIA
Robert H. Orr, Architect



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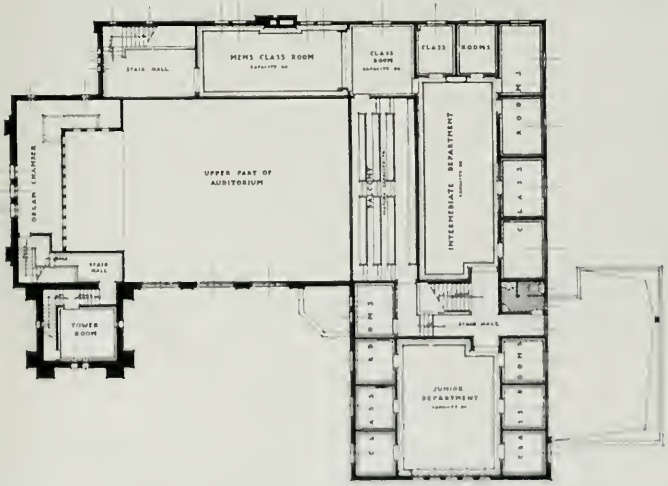
CENTRAL CHRISTIAN CHURCH, SANTA BARBARA
Robert H. Orr, Architect



BALCONY FLOOR PLAN, FIRST BAPTIST CHURCH, SAWTELLE
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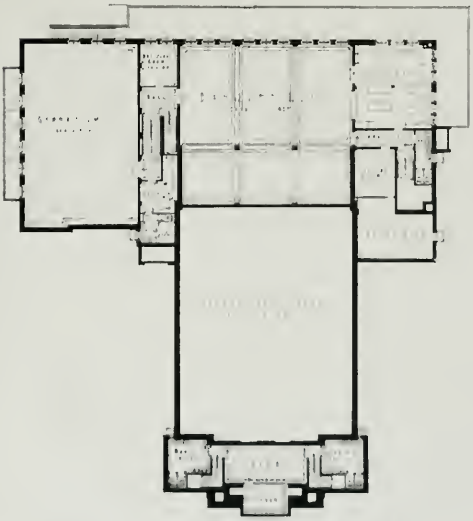
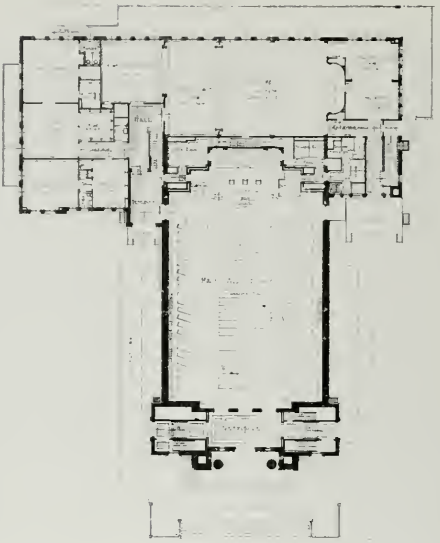
ROBERT H. ORR, ARCHITECT

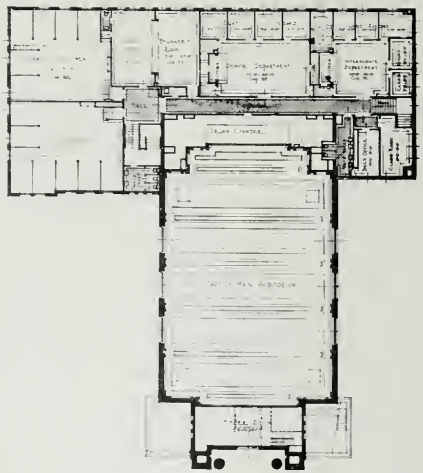
HOLLYWOOD CHRISTIAN CHURCH, HOLLYWOOD
Robert H. Orr, Architect



BASEMENT PLAN, HOLLYWOOD CHRISTIAN CHURCH
Robert H. Orr, Architect



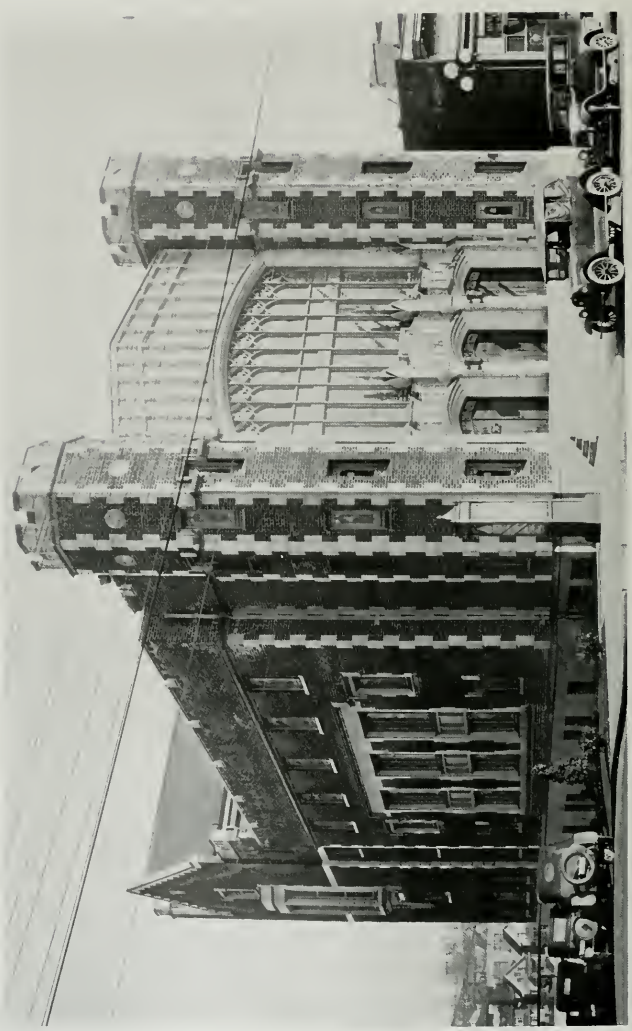
FIRST FLOOR PLAN, HOLLYWOOD CHRISTIAN CHURCH
Robert H. Orr, Architect



SECOND FLOOR PLAN, HOLLYWOOD CHRISTIAN CHURCH
Robert H. Orr, Architect

WESTMINSTER PRESBYTERIAN CHURCH, SEATTLE
Robert H. Orr, Architect

INTERIOR, FIRST CHRISTIAN CHURCH, SEATTLE
Robert H. Orr, Architect



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TRINITY PRESBYTERIAN CHURCH, TUCSON, ARIZONA
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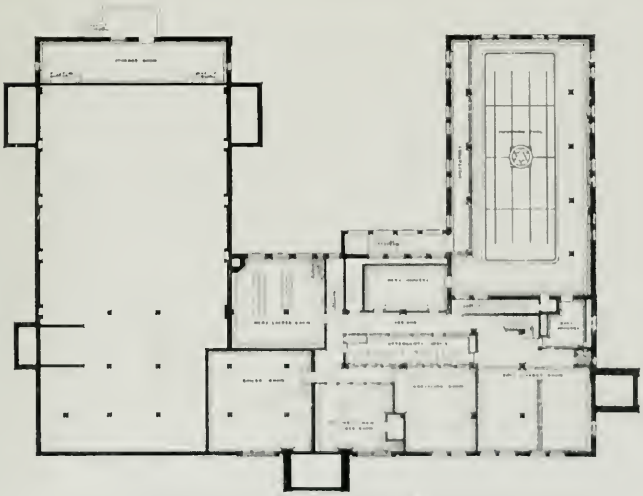
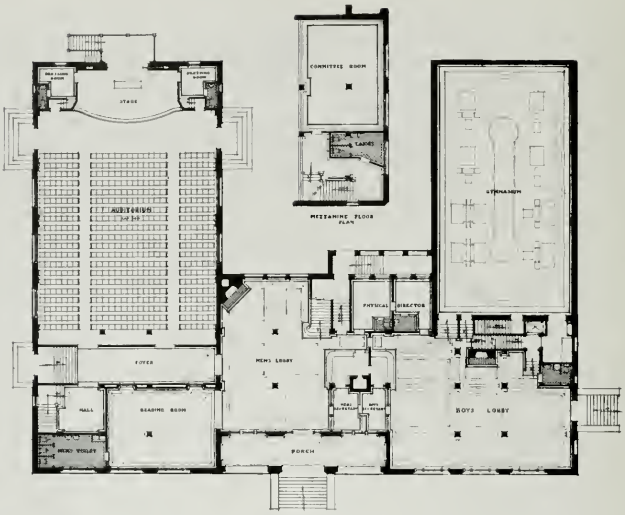
Y. M. C. A. BUILDING, POMONA, CALIFORNIA
ROBERT H. ORR, ARCHITECT

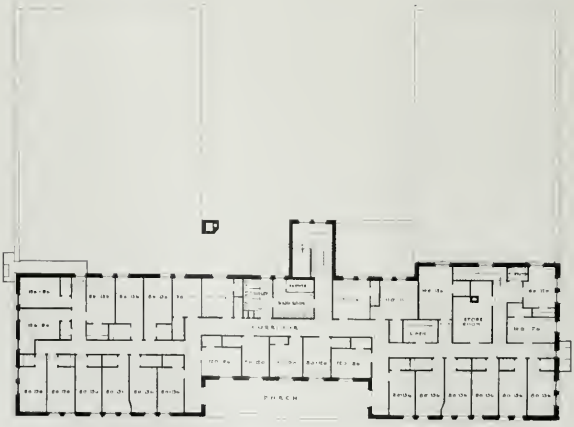
LOBBY, Y. M. C. A. BUILDING, POMONA
Robert H. Orr, Architect



BASEMENT PLAN, POMONA Y. M. C. A. BUILDING
Robert H. Orr, Architect

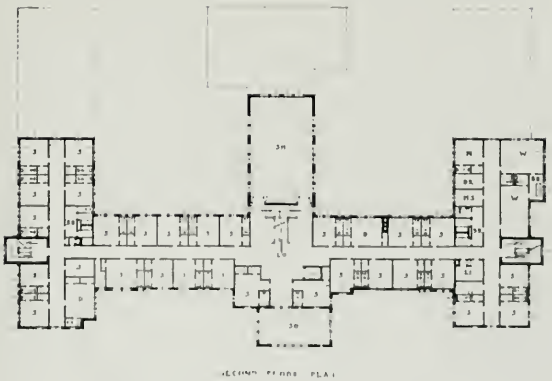


MAIN FLOOR, POMONA Y. M. C. A. BUILDING
Robert H. Orr, Architect



TYPICAL DORMITORY FLOOR PLAN, POMONA Y. M. C. A. BUILDING
Robert H. Orr, Architect

(See perspective, page 48)



CALIFORNIA CHRISTIAN HOME, SAN GABRIEL
Robert H. Orr, Architect

RESIDENCE OF MR. C. A. GRIFFITH, AZUSA
Robert H. Orr, Architect

RESIDENCE MISS LAURA GRIFFITH, AZUSA
Robert H. Orr, Architect

ENTRANCE, RESIDENCE MR. DAVID DAVIES, AZUSA
ROBERT H. ORR, ARCHITECT

HOUSE OF MR. WELLS P. GOODENOUGH, PALO ALTO
Birge M. Clark, Architect

BUNGALOW COURT, PALO ALTO
Birge M. Clark, Architect

Portfolio of Views

of

All Saints Episcopal Church

Pasadena, California

JOHNSON, KAUFMANN & COATE
ARCHITECTS

Photos by Miles Berne

ALL SAINTS EPISCOPAL CHURCH, PASADENA, CALIFORNIA
JOHNSON, KAUFMANN & COATE, ARCHITECTS

TOWER ALL SAINTS EPISCOPAL CHURCH PASADENA
JOHNSON KAUFMANN & COATE. ARCHITECTS

ALL SAINTS EPISCOPAL CHURCH, PASADENA
JOHNSON, KAUFMANN & COATE, ARCHITECTS

STAIRWAY TO BALCONY, ALL SAINTS EPISCOPAL CHURCH, PASADENA
JOHNSON, KAUFMANN & COATE, ARCHITECTS

CHAPEL, ALL SAINTS EPISCOPAL CHURCH, PASADENA
JOHNSON, KAUFMANN & COATE, ARCHITECTS

NAVE, ALL SAINTS EPISCOPAL CHURCH, PASADENA
JOHNSON, KAUFMANN & COATE, ARCHITECTS

BRACKET OVER HOLY WATER FAUNT. ST. PETER AND ST. PAUL CHURCH
SAN FRANCISCO, CALIFORNIA

Lighting Fixtures in St. Peter and St. Paul Church

THE problem of artificial light in the church has been given much study and thought by illuminating engineers but it is only in recent years that these experts may be said to have made marked progress. Advances in electrical reasearch have made it possible to accomplish many things that were not possible heretofore.

That the proper lighting of a church auditorium contributes very materially to the peace of mind and attentiveness of the congregation, is admitted. The problem of the fixture man then is to harmonize the fixtures with the architectural design and at the same time provide effective illumination. All this seems to have been accomplished in the new St. Peter and St. Paul Cathedral in San Francisco.

In this installation the Spencer Electric Company of Oakland has co-operated with the architect, Mr. Charles Fantoni,

Detail of bracket light over Holy water faunt in entrance corridors, St. Peter and St. Paul Church, San Francisco.

Cast bronze fixture placed on low ceiling in side entrances.

in designing fixtures that are in harmony with the architecture. Romanesque in style, the fixtures combine dignity in general outline, majestic proportions and graceful beauty; yet withal, utility of light is given paramount consideration.

Great care has been taken to provide correct distribution of light and thus eliminate reflections. The ornamental and plain parts of the fixtures are of solid cast bronze, plated

CAST BRONZE OCTAGON FIXTURE INSTALLED IN ENTRANCES AND BAPTISIMAL ROOMS, ST. PETER AND ST. PAUL CHURCH, SAN FRANCISCO.

LIGHT IN BOTH TOWER AND BOWL. PANELS IN BOWL ARE HAND PAINTED. LENGTH OF FIXTURE IS SIX FEET, EIGHT INCHES. WEIGHT, 350 POUNDS.

DESIGNED AND MADE BY
SPENCER ELECTRIC COMPANY

with verde antique to correspond with the other plating work of the church. The ornamental cast with leaves has the most relieved part of the ornaments marked with gold plating. The transparent part of the fixtures are of antique art glass, hand decorated.

BRACKET WITH SPECIAL THREE-CHAIN HANGER FOR SANCTUARY OIL LAMP, ST. PETER AND ST. PAUL CHURCH, SAN FRANCISCO.

BRACKETS ARE PLACED ON EITHER SIDE OF ALTAR. HANGER IS MADE OF BRONZE CASTINGS AND SPINNINGS. TOTAL WEIGHT OF FIXTURE, SEVENTY-FIVE POUNDS.

The main fixtures, suspended from 70 foot arches, are fourteen feet six inches high, carry thirty-two candles and weigh 1350 pounds each. The fixtures may be lowered by means of a windlass.

CAST BRONZE LIGHTING FIXTURES, TEN FEET SIX INCHES HIGH, WEIGHT 750 POUNDS
ST. PETER AND ST. PAUL CHURCH, SAN FRANCISCO

FIXTURES ARE HUNG FROM CENTER OF SEVENTY FOOT ARCH BESIDES THIRTY-TWO CANDLES THERE ARE LIGHTS IN TOWER AND BOWL

POOL, COUNTRY HOUSE OF MR. F. M. SPENCER, MENLO PARK

GARDEN VIEW, COUNTRY HOUSE OF MR. F. M. SPENCER, MENLO PARK

Volume of Building on Pacific Coast Today Exceeds All Previous Records

By W. K. BOWES,
Vice-President and Pacific Coast Director of Loans, S. W. Straus & Co.

A GREATER volume of building is under way at the present time in the Pacific Coast cities, as a whole, than at any previous period in the history of the West, and this is true, as well, of the vast majority of individual communities. For the six major cities, an analysis of building activities discloses that in four of them building permits calling for a greater construction cost have been issued since the first of the year than in any previous comparable period. In San Francisco, Oakland, San Diego and Seattle building has reached new high levels. In Los Angeles building activity, while yet far below the volume of 1923, is gradually gaining to a degree which promises an increase over last year and in Portland the 1925 record has been exceeded only by that of the first quarter of 1924.

There is nothing now in evidence which can be expected to slow down the present stride of building and, if the record of the first four months of this year is continued on the relative basis of former years, 1925 will be the banner building year for all of the major cities of the Pacific Coast with the exeception of Los Angeles, and its year's total will far exceed every previous figure but that of 1923 when that city issued more than $200,000,000 in building permits.

The total of building permits issued in San Francisco during the period represented in the chart is $168,374,607 of which $18,508,806 is the amount issued this year. In Los Angeles the total is $522,754,923 and the figure for 1925 is $51,267,439. Oakland has issued $96,572,700 since the beginning of 1922 of which $13,252,767 is for 1925. In San Diego the total is $41,598,141 with $5,685,017 for this year. For Seattle the figures are $83,877,588 and $13,839,535, respectively. Portland has issued $92,126,665 during this period of which $14,495,530 has been issued this year.

An analysis of the statistics of building operations in 82 principal cities of the Coast, reported in the National Monthly Building Survey of S. W. Straus & Co., not only discloses this notable increase in the volume of building permits issued but it also shows a notable advance in the character of structures erected. The average cost estimate per permit is greater for the four months period of this year than during the five previous years, in all of the six major cities and in the vast majority of the other 76 cities comprised in the Straus survey. While this may be explainable in some degree by increased building costs, any such increases are but slight and are applicable only to certain classes of materials, and cannot parallel the ratio of increase in average permit cost.

In Seattle in 1920, the average building permit called for a construction cost of but $1,357. During the first four months of 1925 average permit has called for a construction cost of $3,463. In Portland the average cost has increased from $1,185 in 1920, to $2,694 in 1925. In San Francisco the average has increased from $4,751 to $4,820 in these years. In San Diego the average has increased from $1,355 to $2,195. In Oakland the 1920 average was $2,056 and this year it is $2,820. In Los Angeles in 1920 the average permit called for an estimated construction cost of $2,348 and the average for 1925 is $3,298.

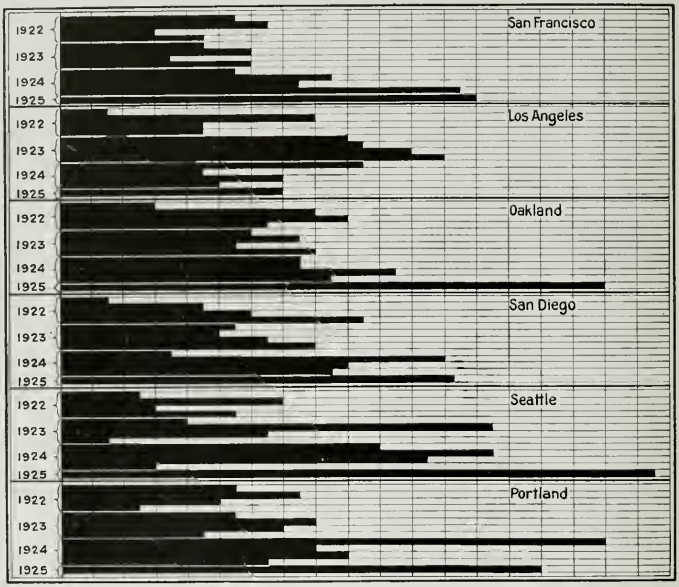


Chart prepared by S. W. Straus & Co., shows relative construction cost volume of building permits issued during each successive quarter-year since the beginning of 1922, for each of the six major cities of the Pacific Coast.

The heavy black horizontal lines shown in the graph do not indicate relative totals as between cities, but each such line, four per year, represent the relation the three-month's total bears to that city's total for fifteen months.

A reference to the accompanying chart will show the relative increase or decrease in cost volume of building permits issued during each three months period since January 1, 1922, for each of the six principal cities of the Pacific Coast. To builders and to building material concerns, to labor and to those who supply the financing of building enterprises, a brief study of this chart will show how much of promise there is in the record of the first four months of this year, for another eight months of construction activity and for a year's total on January 1, 1926, far above any previous record.

* * * *

Building for Permanence

Wise men are building today for permanence, and those who specify and buy materials must remember that, though they themselves may have an expectancy of but a few years, the utility they serve is an enduring institution. A dam well built is as everlasting as the hills. It is for the public and the stockholders that they are intended, and there will be stockholders and a public when fifty years have rolled away. Executives must recognize the responsibility that comes with this and build well.—Improvement Bulletin.

Science to Test Structural Strength of Concrete Arch Dam

By FRED A. NOETZLI,
Consulting Engineer, Los Angeles

AN experiment of great importance and which may have a far reaching effect upon future dam construction will be made this year when a full size experimental arch dam will be built and tested on Stevenson creek, California, for purely scientific purposes. This work is being undertaken by a committee of engineers named by The Engineering Foundation of New York, an institution for scientific research work. Some 30 power companies, municipalities, bond houses and construction firms in all parts of the United States have contributed to date about $68,000 for building and testing this dam.

The object of the experiment is to determine the distribution of the stresses in arch dams, and to ascertain how structures of this type can be designed and built for a maximum degree of safety and yet at a minimum cost.

Dams of large cross sections have been built since many hundred years. One of these dams, the Almanza, was built in Spain before 1590, and is standing today. With the advent of concrete and improved methods of design, more economical types of dams were introduced. The most familiar of these types are arch and multiple arch dams. The old Bear Valley dam in the San Bernardino mountains is of remarkably thin cross section, but nevertheless was a complete success. In fact no arch dam has ever failed as far as records go. From this circumstance the question naturally arises: If the thin dams are safe, how extravagant are the thick ones? This is one of the questions that the experiments on the proposed test dam aim to answer.

In the past engineers have been dependent for their knowledge of dams upon the results of experiments with small models in laboratories, and upon the development of various methods of design by mathematics. Many arch dams have been designed according to the so-called cylinder theory, whereby the arch is considered as a theoretical, free cylinder. This theory fails to take account of the elastical deformations of the arches and the resulting rib-shortening stresses. It also does not include temperature stresses which are known to be of considerable magnitude in arch structures.

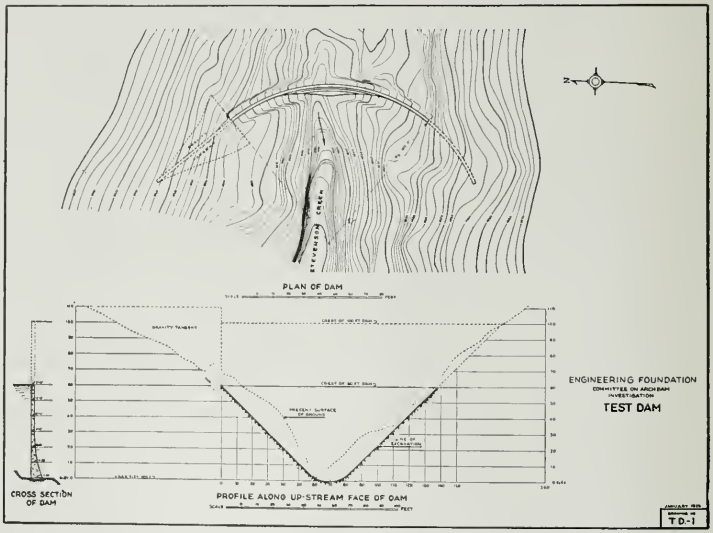
Inasmuch as the bottom of an arch dam is rigidly held against displacement, for instance, by the foundation rock, the lowest part of the dam will not be subject to arch stresses. Successive arch rings above the bottom will be partially restrained with the result that they will be only partially stressed as arches, the remaining load being carried by vertical cantilever or beam action. The method of design which, besides arch action, takes also into account the resistance to the water pressure resulting from the weight of the dam (gravity action) is usually called the method of combined cantilever and arch action. A third method of designing arch dams is applied by considering the dam as a whole and figuring the stresses which result in all horizontal and vertical sections through a dam. From these considerations it is seen that the exact determination of the stresses in an arch dam is probably as complicated a problem as any before the engineering profession.

It is believed that the experiments on the proposed test dam will confirm the correctness of one of the existing arch dam theories, or that they may lead to a modification of one of those theories. They

may also lead to the development of a new theory upon which the design of future arch dams can safely be based.

The test dam as will be built on Stevenson creek is an arch dam of the simplest type. The up-stream face of the dam will be vertical, and the up-stream radius is to be 100 ft. The dam will be 7.5 ft. thick at the base and 2 ft. thick at elevation 30 and above. The bedrock will be excavated on both side abutments so as to provide a symmetrical profile. This arrangement will tend to avoid any complications that might arise from irregular profile, variable arch radius, etc.

The site on Stevenson creek is remarkably favorable for the construction of the proposed test dam. The foundation conditions are excellent, the bedrock being solid granite. The span of the dam will



From Southwest Contractor and Builder

be about 20 ft. at the base and about 125 ft. at a height of 60 ft. above the foundation. The dam and reservoir will be located entirely upon government land. The natural flow of Stevenson creek is diverted a few miles above the dam site. A power tunnel of the Southern California Edison Company passes just above the dam site, and an adit to this tunnel equipped with a valve will permit of filling the reservoir in a very short time. The capacity of this reservoir behind a dam 60 ft. high is less than 5 ac. ft. These exceedingly favorable conditions will offer perfect control of the height of water in the reservoir without depending on or being influenced by the natural flow of the creek.

It is proposed to build the dam first to a height of 60 ft. and test it repeatedly under various load and temperature conditions in the

course of about one year. During the construction of the dam a large number of instruments for measuring strains, temperature variations and deflections will be placed into the concrete and at a large number of points on the up-stream and down-stream side of the dam. The Bureau of Standards is co-operating with the Committee on Arch Dam Investigation in this work and has developed a special instrument of the carbon resister type which can be placed in the concrete or on the up-stream face of the dam below the water line, and which registers by an electrical device the strains which occur in the concrete under the loads imposed upon the dam. The strains will be measured at a large number of points in horizontal, vertical and inclined directions. The deflection of the arches at various elevations will be measured at the arch crowns and in several vertical sections part ways up the side hills.

A number of instruments will be placed in the concrete during the construction of the dam, and the strains and temperatures measured at suitable intervals. The first complete series of measurements will be made immediately after the dam has been poured, and the forms have been taken off. The dam will then be left standing with empty reservoir, all water being diverted through a diversion tunnel, during a period of several months in order to give the concrete time to harden. Some measurements will be taken during this period for the purpose of ascertaining temperature, shrinkage and other deformations of the concrete.

After the dam has seasoned sufficiently the diversion tunnel and gates will be closed and water will be allowed to flow from the power tunnel of the Edison Company into the reservoir behind the test dam. When the water in the reservoir has risen to a certain height of say, 10 ft. above the base of the dam, a complete series of measurements will be taken with all the instruments on the dam. Then the water level in the reservoir will be raised to, say elevation 20, when a new complete series of measurements will be taken. This process will be repeated with the water surface at higher elevations and, finally, with the reservoir empty again. Such series of measurements may be taken as often as is desirable and at any season of the year. After all the information has been obtained from the 60 ft. dam, the structure will be raised by 10 ft. and new measurements taken with various water levels in the reservoir. Then the dam will again be raised in steps of 10 ft., and each time new series of measurements will be taken. When the dam has reached a height of 100 ft. the stresses in the structure will be so high that the dam will probably fail.

The experiments on the test dam will extend over a period of one to two years, and a large number of test series will be made under a great variety of load and temperature conditions. Many test series will be repeated for checking purposes. Hundreds of laboratory tests will be made on concrete specimens obtained from the same batches of concrete of which the dam is poured. The quality of concrete will be about the same as used for practical dam constructions, the only difference being that it will be poured with somewhat more than usual care so as to assure a good degree of uniformity throughout the structure.

* * * *

Architects Wanted in South America

Mrs. Leslie Ganyard of the Alumni Bureau of Occupations, University of California, has received a request for two architects to go to South America. They must have a speaking knowledge of Spanish and be able to design buildings.

Some Thoughts on the International Town, City and Regional Planning Conference

By STEPHEN CHILD, Landscape Architect

As the writer calls to mind the many papers and discussions, the thought that appears most clearly to have dominated the Conference, was that of distribution. An entire session was devoted to this subject, but more than that, nearly every important paper referred to it in some form or other, and time and again during the discussions was it mentioned.

The crime of congestion—the crying need of better distribution—New York with its 900 people to the acre in its East side tenement district, and 20 to the square mile a few miles away in New Jersey—with one of its sky-scrapers having a day-population of over 5,000 people—with its crushing burden of debt for unprofitable subways—indeed an outstanding example of what not to do.

As the writer looks at the problem of cities, particularly of course our big cities, the great question is how can we better distribute population and industries? And the answer is, don't build up or dig down—spread out! Sky-scrapers entail extravagant subways and subways entail crushing debts. It has been said before, but will bear repeating—no city can afford a subway and what is more the need for a subway is proof of bad planning.

Bad planning not only in New York but in Cleveland, Pittsburgh, Detroit and other cities is calling not only for subways but for the exceedingly expensive "super-highway," and it is openly stated that unless these are accompanied by radical restrictions as to height of buildings, they will only mean more congestions. San Francisco and Oakland, please take notice.

Apropos of all this, however, the statement was made that statistics indicate the world's potential food supply and more particularly, that of the United States, will not permit much more than double our present population for the nation as a whole, while as for the great cities, water supply and other necessities are going to pretty effectively limit their size—their rate of growth to be relatively less than that of the smaller ones, and no one of the big ones to increase more than fifty per cent in population. Distribution is in fact being forced upon us.

Another important feature of the Conference of particular interest to the many communities about San Francisco Bay, was the papers and discussions about Regional and State Planning.

The method of procedure recommended was: first, the establishment of a Voluntary Association—precisely what we are doing—with emphasis placed on the need for having all existing administrative units—cities, towns, and counties represented. Second, the making of a complete preliminary survey—a diagnosis of civic ills. Third, an effort to find out, and clearly set forth, the causes of these ills rather than an attempt to solve any one of the disorders; not to determine any hard and fast plan, but rather seek out opportunities and make them known to those interested.

In connection with this phase of the problem, the importance of diagramatic presentation of data and preliminary schemes was emphasized.

*This conference was held in New York City April 20-25, and was attended by Mr. Child as a delegate from the Pacific Coast Chapter of Landscape Architects.

There must come a time later, however, when it will become necessary to attack these many civic ills and cure them—get results. Upon the problem of how to do this, we were given advice by Englishmen, Frenchmen, Germans and Americans, and as to this, there was a very remarkable unanimity of opinion.

Is it not true that it is all very well for City Planners to prepare their plans for making our cities and regions more effective and more beautiful, but that these plans make about as much impression as the announcement of some new theory of philosophy? Those few who are interested in either the new theory or the beautiful plans, and who know anything about them, either accept or reject them, but a very large majority of the people pay no attention to them whatever. Immediately, you set about raising funds to carry out your plans, however, the voter's pocket nerve is touched, and everybody has an idea about them, which usually simmers down to some means of blocking them.

All agreed that multiplicity of administrative authorities practically prevents putting such reforms into action. It is all very well to hope for co-operation on the part of these many administrative authorities, and aim to secure as great an amount of this sort of co-operative effort as is possible. (The writer has emphasized this point in another paper recently.) This is what the promoters of the New York Regional Plan must perforce depend upon for they can hardly hope for anything else. It was freely expressed, however, that there were grave doubts of success, and all agreed that the solution wherever practicable was a new administrative unit—a Regional Unit to coincide with the Regional Plan—a concentration of administration to correspond to the decentralization of the population proposed. But all agreed too, that this newly formed Government unit should not interfere with existing city or State units, but should apply itself strictly to the work of the orderly development of the plan. The writer has already outlined the new administrative unit now functioning in the Ruhr District of Germany, and it was a great pleasure to hear Dr. Schmidt, its Director, explain still further its methods, and some of the very remarkable results obtained. The San Francisco Bay Region has much to learn from their brilliantly successful example.

Still another interesting feature of the Conference, and much of it not on the programme, was the discussion about the Garden City idea. A Garden City, you will remember, was defined as "a town planned for industry and healthy living, of a size that makes possible a full measure of social life, but no larger, surrounded by a permanent rural belt, the whole of the land being in public ownership or held in trust for the community."

It was emphasized in the discussions—first, that while it may be desirable, it is not essential to start new; that many a small satellite community may, by good planning, be dowered with nearly all the benefits of a Garden City. This is a thought that applies to many of the communities about San Francisco Bay, among them Palo Alto, Redwood City, San Jose, Niles, and others.

As for the permanent belt of open land, an extension of our Zoning Laws will secure that, while nearly all the benefits accruing from community ownership can be attained by the application of the principles of Zoning.

Communities situated as are Tucson and Phoenix may readily attain the Garden City ideal if they will but begin in time and plan for it intelligently.

The above allusion to Zoning is a reminder of Mr. Bassett's fundamentally sound paper with its re-emphasis upon the necessity for Boards of Appeal; Mr. William's insistence upon reasonableness as the crux of the zoning problem, and Mr. Whitten's new thoughts about a further extension of the zoning principles to include control of the subdivision of lots.

The special recommendation of Messrs. Tuttle of New York (Report p. 3) and Knowles of Pittsburgh (Report p. 3) as to the Traffic problems are vital to most of our cities.

Other interesting features of the Conference were Dr. Stubben's recommendation of "inside walks," the gift of park lands noted at Des Moines; Mr. Unwin's advice that we avoid mediocrity and think more of quality than quantity in our plans, that cities refrain from copying one another, but rather develop distinctive plans, and most important of all his statement that Imagination and Vision were far more important than statistics.

* * * *

Canon of Ethics for Architects

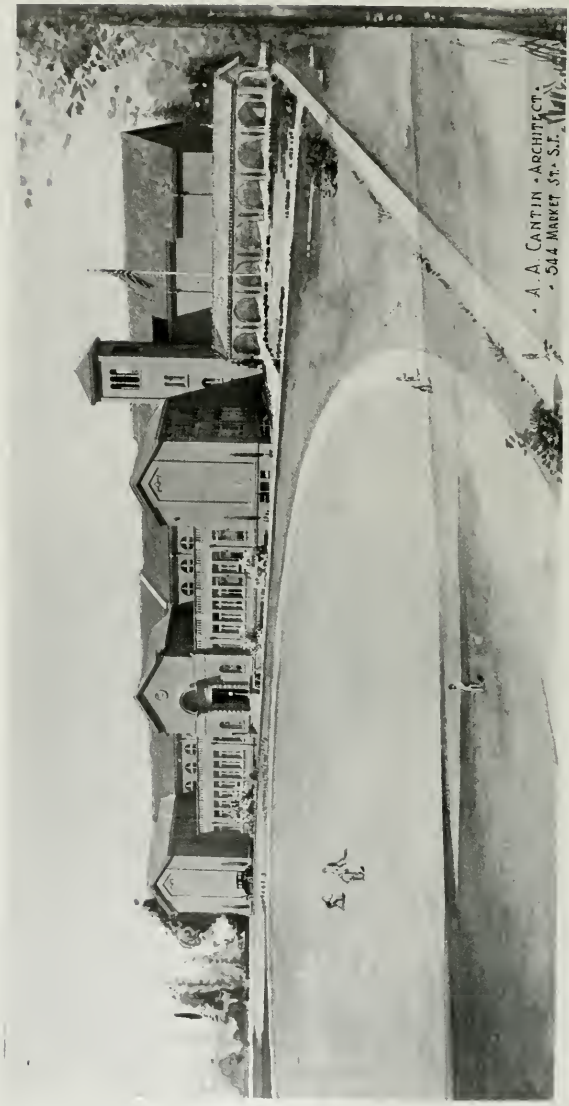
FREQUENTLY requests are received by this magazine for information regarding the canons of ethics of the profession. For the convenience of readers the following paragraphs are published from the canons of the American Institute of Architects, which organization has adopted them as a general guide, but not necessarily to be mandatory:

It is unprofessional for an architect:

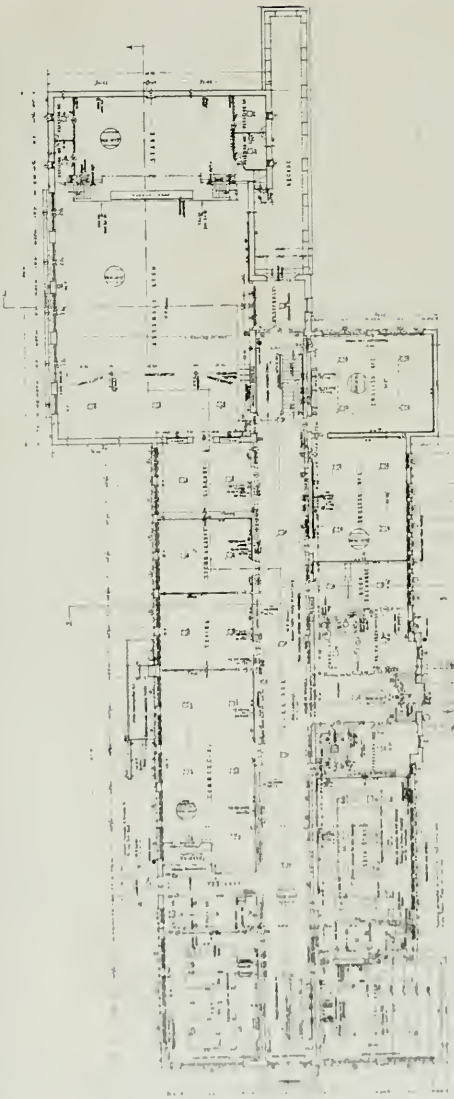
1. To engage directly or indirectly in any of the building or decorative trades.
2. To guarantee an estimate or contract by bond or otherwise.
3. To accept any commission or substantial service from a contractor or from any interested party other than the owner.
4. To take part in any competition which has not received the approval of the Institute or to continue to act as professional advisor after it has been determined that the program cannot be so drawn as to receive such approval.
5. To attempt in any way, except as a duly authorized competitor, to secure work for which a competition is in progress.
6. To attempt to influence, either directly or indirectly, the award of a competition in which he is a competitor.
7. To accept the commission to do the work for which a competition has been instituted if he has acted in an advisory capacity, either in drawing the program or making the award.
8. To injure falsely or maliciously, directly or indirectly, the professional reputation, prospects or business of a fellow architect.
9. To undertake a commission while the claim for compensation, or damages, or both, of an architect previously employed and whose employment has been terminated, remains unsatisfied, until such claim has been referred to arbitration or issue has been joined at law, or unless the architect previously employed neglects to press his claim.
10. To attempt to supplant a fellow architect after definite steps have been taken toward his employment, e.g. by submitting sketches for a project for which another architect has been authorized to submit sketches.
11. To compete knowingly with a fellow architect for employment on the basis of professional charges.

HOUSE AT HOLLYWOOD, CALIFORNIA
Lloyd Rally, Architect

HOUSE AT HOLLYWOOD, CALIFORNIA
Lloyd Rally, Architect
Illustrations courtesy California Southland



ALHAMBRA UNION HIGH SCHOOL, MARTINEZ
ALEXANDER A. CANTIN, ARCHITECT



PLAN, ALHAMBRA UNION HIGH SCHOOL, MARTINEZ
ALEXANDER A. CANTIN,
ARCHITECT

Electrical Installation in Homes

THE architect can be of tremendous assistance to the ultimate occupants of any home being erected under his direction if he will provide in it an electrical installation that will permit of the free and unrestricted use of electricity for light, heat and power. Such an installation will provide an adequate lighting system and a sufficient number of convenience outlets to take care of the use of electrical appliances with a minimum of effort and a maximum of convenience.

But there is more to specifying a complete installation than merely indicating an outlet here and another one there with little or no reference to their ultimate use. The "nozzles" for electric power should be placed at locations and at the heights which will enable those dwelling in a house to use them to advantage.

The same is true of the electric switch which operates the lighting fixtures in the house. Too often we see them placed at spots which require considerable effort in the dark to reach them, and since their primary purpose is to make convenient the operation of the lighting units, care should be taken that it is made really convenient.

One of the cardinal sins against this convenience is the placing of this switch behind a door, making it necessary to open it and walk behind it to get at the switch. It would be just as simple to place the button on the opening side of the door, where it could be handled by opening it but a few inches and thrusting the hand inside.

Many builders and architects are specifying duplex convenience outlets at all places in the house. The reason for this is a sound one. These double outlets cost but a few cents more than the single variety and they provide an extra outlet for use with an appliance, for example, when a portable lamp is attached to the other side.

The three-way switch is another convenience that is bound to be appealing to those living in any house, since they eliminate a great many steps in controlling the light. They are especially convenient in the upper and lower halls, operating the fixtures located there. An excellent arrangement is to have the upper hall light operated by a switch in the lower hall and another upstairs. This permits one to ascend the stairs without turning out the light downstairs, thus having plenty of light, and when the upper hall is reached it is a simple matter to extinguish the light below. An ideal arrangement is to have the lights on both floors controlled from either one, thus assuring plenty of light and at the same time eliminating the inconvenience of going up or down stairs.

Another feature about the electric switch is its power to pay for itself in a short time through saving of current. A person is very much more likely to turn off the light in a room if a switch is provided for the purpose than would be the case if it were necessary to make an effort to reach the fixture.

As to the location of convenience outlets, considerable thought should be given to the subject. Consideration must be made of the use to which an outlet is to be put in the home and its placing made accordingly.

In the living room all the outlets should properly be placed in the baseboard, since they are to be used primarily for the operation of portable lamps, and as such their connection is more or less permanent, except one in the floor, which will be found most convenient. Even with an electric phonograph, the connection is of a permanent nature, so there

is no special reason for placing them higher on the wall. The use of electric appliances in the living room is more or less casual and the stooping necessary to attach them to the baseboard outlet is reduced to a minimum.

Beside the serving table in the dining room, however, a height of about 36 inches is the best since that one is to be used with cooking appliances of various kinds located on the furniture, and their employment will be more or less constant, probably being employed at each meal. This height is most handy and saves an endless annoyance in stooping to attach and detach them. The use of an outlet beside the buffet will be for lighting electric candlesticks or some other form of decorative lighting in all probability, so this one can be placed in the baseboard. If a third is installed in this room, and there is plenty of opportunity to use it, it should go about three feet from the floor.

Since the appliances in the kitchen will be used exclusively in connection with cooking appliances of various kinds or are appliances used in the preparation of food, they should be placed 36 inches from the floor at intervals near enough to the workboard and kitchen table to enable the housewife or servant to use them with little or no effort. This height will bring them just above the top of the working plane in each case and it is then a simple matter to plug in and detach them. If an electric dishwasher is used, the outlet furnishing current for it should be about the same height.

Many of our modern kitchens are blessed with an electric ventilating fan, which does so much to rid that room and in fact the rest of the house of the odors of cooking, and in that case the outlet for use with this convenience is to be placed high up on the wall about even with the top of the window in which the ventilator is placed. This should be a single outlet since there will be no occasion to use it with any other device, and the same is true of the outlet intended to operate the electric refrigerator, this one being placed about five feet above the floor.

In the bedrooms, the outlet designed to operate a light for reading in bed or one on a table between twin beds, should be installed in the baseboard. Those which are to be used with toilet appliances by the matron of the house, however, are best placed about three feet from the floor since this height enables her to use them with the least amount of effort.

In the lower hall a console table with portable lamps will probably be used, and to operate the lamp a baseboard duplex outlet is the best. The extra side can be employed for running a cleaner when necessary.

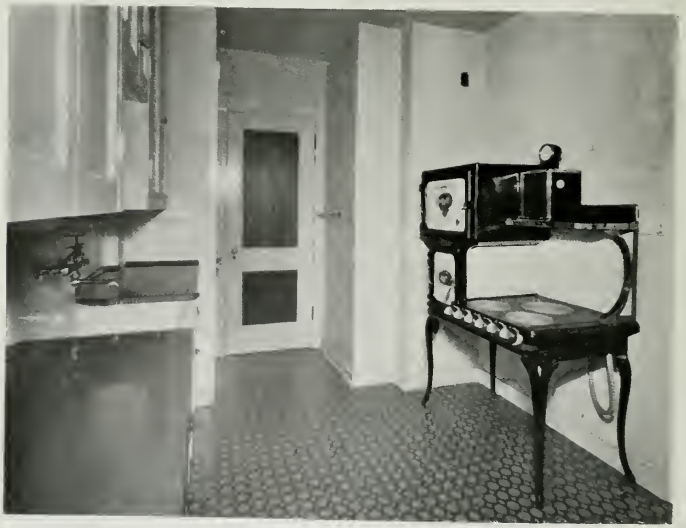
The electrical installation in a home has a direct bearing on the convenience and therefore happiness of those dwelling there, and if the architect and builder in charge of the work specifies a complete one, he is rendering a service to his client. The home owner may not be fully conversant with the comfort and convenience afforded by such an installation, and the man in charge of the work should bring it to his attention. In the house built for speculation, on the other hand, a complete electrical installation is a strong selling argument.

* * * *

Proposed Plumbing Ordinance for Reno is Defeated

Reno, Nevada, city council has "killed" a proposed ordinance restricting plumbing within the city limits to union plumbers. It is claimed by the opponents of the measure that the proposed ordinance would give the plumbing craft full control of the situation and prevent property owners from doing their own work. A similar ordinance was defeated a year ago.

BILTMORE APARTMENTS, SEATTLE, WASHINGTON
Stuart and Wheatley, Architects



TYPICAL KITCHEN, BILTMORE APARTMENTS, SEATTLE, WASHINGTON
Stuart and Wheatley, Architects

The New Biltmore Apartments in Seattle, Wash.

THE Biltmore Apartments recently opened for occupancy is Seattle's largest and most up-to-date apartment building, and is said to be the finest building of its kind in the Northwest. The structure was erected at a cost of approximately $750,000 and contains 125 apartments of two, three, and four rooms each with every kind of modern improvements.

Located on the brow of Capital Hill, the apartment commands an unsurpassed view of the bay and Olympic Mountains, the university and other residential districts. It is also desirably located from the standpoint of accessibility to the shopping and theatre districts.

The Biltmore is of fireproof construction with reinforced concrete floors and supporting columns. The outside walls present a pleasing exterior of brick and tile, trimmed with terra cotta. Modern Gothic architectural details have been followed in the ornamentation of the building. An impressive Gothic entrance, approached through a wide court, is one of the particularly attractive features of the structure. The court will be artistically landscaped and will afford a pleasant view from the lobby directly back of it. The spacious lobby is finished in light shades of Tiffany blend and is attractively decorated with rich architectural details.

Each apartment suite in the building is a complete household unit and possesses an individuality of its own. Conveniently arranged kitchenettes and breakfast alcoves are supplied together with modern conveniences and built-in features, including closed cabinet refrigerators, ironing boards, electric outlets and electric ranges. These ranges are the latest type automatic Westinghouse ranges which have been universally successful wherever used.

The principal living rooms of each suite are connected by means of French doors enhancing the roomy appearance and attractiveness of the apartment. In the dining room the lighting fixtures are suspended candlabra, finished in silver. Throughout the building, the fixtures are expressive of the latest innovations in eletrical fixture design and manufacture.

* * * *

Better Church Architecture

THE Methodist Church, South, has joined the movement for better church architecture. Proof of the need for better architectural service is best described by the Rev. J. A. Baylor, architectural secretary, who says among other things that "trying to get along without an architect is false economy," and adds that "in going about the country all too frequently buildings are seen with bulging walls due to improper roof construction, foundations giving way, cracked walls, leaning chimneys, leaking roofs and poor acoustics." The church is now attempting to improve conditions by supplying to competent and interested architects information necessary to enable them to adapt their plans to the needs of the church; also an effort is made to secure wherever possible the intelligent co-operation of these architects in an improved building programme; to direct pastors and building committees to those architects prepared to give them the best service; to supply building committees suggestions as to plans and parsonages, including furnishings, contracts, etc., and to prepare plans and specifications for churches when called upon, or when such service cannot be secured elsewhere.

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Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer, Inc.
PUBLICATION OFFICE:
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828
The publishers disclaim any responsibility for statements made in the advertisements of this magazine. Member of the Western Business Papers Association.
Terms of Subscription
(Including postage) to all parts of the United States, $2.50 per annum; to Canada 75c additional; to all Foreign points $1 additional
Vol. 81 JUNE, 1925 No. 3

PROFESSIONAL ETHICS

It is unprofessional for an architect to accept any commission or substantial service from a contractor or from any interested party other than from the owner.

—Article 3, Canon of Ethics, A. I. A.

Many years ago, before the A. I. A. was organized and a code of ethics had been adopted for the profession, it was more or less common practice for manufacturers of building materials to offer architects a fixed percentage of the cost of such building materials to specify their use in certain buildings. It is a regrettable fact that such offers were generally accepted and, as a rule, the man who offered the most had his product specified without regard to the selection of the best thing for the owner's interest. This was one of the abuses that led the high-minded men of the profession to organize the A. I. A.

Unfortunately for the profession, writes Architect Loyal F. Watson in California Southland, there are today architects who do accept commissions and favors from manufacturers and material men.

It is the endeavor of the A. I. A. to include all architects worthy of the name in its membership and to set up a standard of practice through its code of ethics that will enable any one desiring to erect a building to select any architect with the feeling that this architect is not only capable but absolutely honest. An owner wants to feel that his architect can and will advise him intelligently and will be absolutely impartial in making decisions all the way through the work.

If a professional man does not inspire confidence, how can he expect to secure clients? Imagine the state of mind of a client who finds that the architect, whom he has selected and in whom he has the greatest trust and confidence, is receiving commissions from the metal lath manufacturer's agent, the heating contractor, or other material men.

Of course the manufacturer's agent and material men are going to have their opinion of such architects and the profession is bound to feel the effect of these opinions.

There are architects who, while they will not accept monetary commissions from material men or manufacturers' agents, and who feel themselves perfectly ethical, yet are willing to expect and ask real services and substantial favors from such men. They cannot see and will not admit that such services and favors are one with money commissions.

It is a sad commentary that most people will allow themselves to think that they are able to get something for nothing, and particularly in the case of architectural services. They will let a designer and builder tell them that their building plans will cost them

nothing or that the building plans will amount to 1½% or 2% of the cost of the building. Again, they will employ a certain architect because he charges only a very small fee. It is this type of designer who accepts commissions and favors from material men and manufacturer's agents, and owners pay these commissions in every case in the increased cost of the material, the poorer quality of the material and the lower quality of the workmanship secured.

MAKING THE HOME FIREPROOF

The short-sighted policy of exploiting the public through promotion of more home building without an adequate program of fire prevention, was severely criticised in a resolution presented at the National Conference on Home Building, held recently in Chicago. The annual fire loss in the United States amounts to more than $500,000,000 or $4 per capita. This is twice the interest paid out last year on all savings bank accounts.

While builders and real estate men stage shows designed to increase the interest of the people in home building and while contractors, architects and engineers are working to reduce the cost of homes for people of moderate means, insurance companies report an increase in losses due to fire. Much time and effort has been devoted to reducing costs of building, with the result that there is small hope for further progress in reducing costs without sacrificing some necessary elements of safety. The damage done by fire in this country is not alone a personal problem affecting the owner of a burned building. It concerns the entire country in the destruction and loss of natural resources that go up in smoke, and in the waste of capital. Added to this is the sacrifice of human lives; 15,000 people being killed last year by fires.

The recent hotel fire at West Palm Beach, Fla., in which the Breakers Hotel was destroyed with a loss of $4,000,000 is a case in point. But while this particular fire was given wide publicity, it is an insignificant part of our yearly fire loss. On the average there is a farm building fire every seven minutes. There is an average of fifteen hotel fires, five schoolhouse fires, and five church fires every day in the year.

The remedy for this condition would appear to be a more widespread use of permanent building materials. Selection of the material must depend, of course, upon the type of house wanted. Approximately three-fourths of all residence fires of known origin start in basements. Masonry types of construction containing first floors with at least a two-hour fire rating are therefore recommended. For wall construction, engineering tests have proved that stucco-on-concrete masonry is permanent and firesafe. Concrete block, brick and tile are standardized as to size and shape so that they can be used in any type or size building. Standard practices also have been adopted for the application of Portland cement stucco, a material which is adapted to a wide variety of finishes and colors and can therefore be used with all architectural types or motifs, with metal lath as a background. Steel sash is also being advocated for residences more than ever before.

Five-Day Working Week

Nine building trade unions in Seattle have secured the five-day working week. So far as is known this is the only city in the country where the movement has made any headway this year. Earlier in the season a number of trades in some of the larger cities of the East and Middle West demanded it, but following the conference of employers in Cleveland on January 5th no concerted effort was made to secure it.

Contractor and Builder

What Does It Cost?

What does it cost to build a five-room house?

One day a man asked a contractor this question and the contractor said $2,500.

The next day he asked another contractor the same question and the reply came back $5,000.

Why the difference? Did the first contractor make a mistake or was the second contractor trying to rob him?

As a matter of fact both contractors were honest—both gave an accurate estimate—then why the difference? Smply this:

The first contractor had in mind a house with small rooms—a sort of stero-type affair—floors of oak but not of quality—hardware of steel—walls tinted —and so on.

The second contractor had in mind a house with large rooms — a distinctive home—floors of the best quality oak—hardware of brass—walls painted with oil—tiled walls in the bath—and so on.

The question "What does it cost to build a five-room house?" cannot be answered any more accurately than can the question, "What does a five-passenger automobile cost?"

Before the question can be answered it must be known what kind of an automobile you want and so it is with houses.

One man pays $15.00 for a suit of clothes—another pays $115.00—you can tell the difference at a glance—quality and workmanship are different.

And so it is with houses. — Builders' Exchange Topics, Long Beach.

Flying Ants Damage Buildings

Owing to lack of information on the destructiveness of our native termites or white ants and their wide distribution throughout the United States, buildings are often erected with untreated woodwork directly in contact with the ground, leaving the way open for the entrance of these insects.

In consequence, termites burrow into the wood and may greatly damage the woodwork of the building before their presence is detected. It is a great hardship for a man on a moderate salary to make a large initial outlay on a new house and, after one or two years, be forced to expend several hundred dollars additional to reconstruct the building to eliminate the termites.

The only effective permanent preventive and remedy, says the United States Department of Agriculture, is proper construction of the building with the knowledge of the habits of termites and the specific that will eliminate them. This specific is "insulation" of all untreated woodwork from contact with the ground; it can be accomplished by the use of stone or concrete foundations and lower flooring or the use of foundation timbers impregnated with coal-tar creosote. Practically all the termites which damage buildings in the United States are of subterranean habit; if they can be kept from reaching woodwork from the ground they can not survive in the building.

White Ants Wreck Building

Because of the damage to timbers by white ants the church of St. Boniface parish at Edwardsville, Ill., had to be reconstructed. The dangerous condition of the building was discovered when a fragment of a rafter fell from the ceiling during services. Messrs. A. J. Hoffman and M. B. Kane, architects and building experts, were called to examine the structure and were amazed to find that insects had gnawed away the interior of the four main church pillars so that a fist could have been driven through each pillar.

Further examination disclosed the timbering under the floor had been so thoroughly eaten away that it crumbled to dust whenever touched. It was found that the trusses which supported the roof and the Gothic ceiling were not extended to the walls when the church was erected in 1869, and the brick walls were not carrying the load. The weight of the entire ceiling, rafters, beams and girders rested upon ten columns in the middle of the church.

Even the pews at the north side of the church did not escape the depredations of the insects. More than two dozen of them had to be replaced. The repair bill amounted to $25,000.

Quantities of Materials for Concrete

A second edition of Bulletin 9 of the Structural Materials Research Laboratory, Lewis Institute, Chicago, "Quantities of Materials for Concrete," by Duff A. Abrams and Stanton Walker, has been issued.

The principal subject-matter of the Bulletin is a series of tables of proportions and quantities for Portland cement concrete for compressive strengths of

2000, 2500, 3000, 3500, and 4000 lbs. per square inch at 28 days, using fine and coarse aggregates of different sizes, and concrete of a wide range of workability as measured by the slump test.

The tables are based on the water-ratio method of proportioning concrete developed in this laboratory as a result of many thousands of tests. They differ principally from table by other authors in that the proportions have been selected with definite strengths in view, and take into account the quantity of mixing water as well as the size and grading of the fine and coarse aggregates.

This Bulletin was first published in 1921, but had been out of print for several months. In the second edition, the text has been rewritten to constitute a more complete discussion of the subject. A method of taking into account the differences in volumes of materials when measured in the laboratory and when measured under field conditions is described. The descriptions of field and laboratory test methods have been enlarged and include recent changes in the Standards of the American Society for Testing Materials.

Century Old Cement Patent

A photographic copy of the original Portland cement patent granted by King George the Fourth, of England, to Joseph Aspdin, of Leeds, October 21, 1824, was presented to the Smithsonian Institution, Washington, D. C., March 27, by the Portland Cement Association. The cement patent copy is an exact replica of the original which is still in the possession of the Aspdin family in England. This copy was brought to the United States by Sir Edward Airey, former Lord Mayor of Leeds, during his visit here last fall.

Time Schedule for Bidding

Contractors are continually complaining that architects do not give them sufficient time to figure large jobs. Secretary E. Earl Glass of the Associated General Contractors, Southern California Chapter, has attempted to improve conditions by offering the following schedule of time required for preparation of bids:

Class	To $25,000	$25,000 To $50,000	$50,000 To $100,000	$100,000 To $200,000	$200,000 To $400,000	$400,000 To $700,000	Over $700,000
Class of Structure	NUMBER OF DAYS						
A—Theatres, Large Schools, Clubs, Hospitals, Banks, Churches	8	10	12	14	16	22	30
A Hotels, Office Buildings, Apartments	7	8	10	12	14	18	24
A Factory and Loft Buildings, Warehouses	7	8	9	10	11	16	20
C Theatres, Schools, Churches, Clubs, Banks, Hospitals	9	9	10	11	12	18	
C Apartments, Flats, Office Buildings, Stores	7	8	9	9	10	16	
C Warehouses, Garage Buildings, Factories	7	7	7	8	8		
D—Residences, Flats	6	8 to 12					
D—Sheds, Warehouses	6	8 to 10					

Nail-Holding Power of Cinder Concrete

Some time ago the Pittsburgh Testing Laboratory, Pittsburgh, Pa., made tests for F. J. Straub, New Kensington, Pa., to determine the holding power of wire nails in cinder building blocks as compared with wood. Samples were placed in a Universal testing machine and the loads required to draw the nails determined. The results were:

Size of Nail	Material Used	Depth of Nail in Material	Load in Pounds Required to Draw Nails
20 d	2x4 Yellow Pine	1½	260
16 d	do	2	330
16 d	do	1½	270
16 d	1 in. Ash Board	⅞	470
20 d	Cinder Concrete Block	1½	300
20 d	do	1½	250
20 d	do	1½	200
16 d	do	1½	200
16 d	do	⅞	50
*20 d Old Nail	Cinder Concrete Block —5 years old	1½	560

*This specimen was a nail which had been driven into a cinder block used in the walls of a bottling plant in New Kensington, Pa. When the building was partly destroyed by fire, this specimen was selected to determine the effect of age on the holding power of the nail. The nail had not rusted in the concrete, although it had rusted where not embedded.

Repairing Floors

Certain quite well established rules should be carried out in the repair of concrete floors. The following directions will give good results, and the question of the occupancy of the building is not important:

1. Clean the surface to be patched.
2. Roughen it.
3. Thoroughly soak the surface but leave no film of water.
4. Select for patching material aggregate the same as the original floor and mix the same proportions as originally used.
5. Apply with force as with a cement gun, then do not disturb until the patch has hardened.
6. Finish with the least possible trowelling and keep wet as long as possible.

Change of Address

William A. Larkins, building constructor, Los Angeles, has moved to 518 Byrne building, Third street and Broadway, that city.

With the Architects

Building Reports and Personal Mention

Tribute to Former San Francisco Architect

(From the Washington State Architect.)

It is refreshing to find the memory of a good architect honored.

The quadrangle of the College of Puget Sound is named the Sutton Quadrangle, in honor of the architect, Mr. Albert Sutton, who passed along last year.

The firm of Sutton, Whitney & Dugan were architects for the three beautiful buildings which surround three sides of this parking, and the beautiful gates are the design of Mr. Sutton.

Edward H. Todd, president of the College of Puget Sound, says:

The quadrangle named for Mr. Sutton should have been named for him. We had a problem relative to the grade from C. H. Jones Hall to the street, which would have been quite steep. The Tuesday before his death Mr. Sutton brought to me the plan for putting in a retaining wall six feet high, to be crowned with a stone balustrade. He and I agreed that that was the thing to do. We will mount on that wall, a tablet to his memory, naming the quadrangle.

Mr. Sutton's death was a very great loss to the college. He had not only the technical knowledge, but a broad vision relative to college buildings. He had a cultured imagination. He had a wealth of enthusiasm over our enterprise, and furnished means of ready expression of dreams and plans which we had had for the College of Puget Sound. We shall ever hold the name of Albert Sutton and his work in highest esteem.

EDITOR'S NOTE—Mr. Sutton, prior to locating in Portland, practiced architecture in San Francisco, under the firm name of Sutton & Weeks, the junior partner being Mr. Charles Peter Weeks, now of the firm of Weeks & Day.

Municipal Buildings for Seattle

Architects Schack, Young & Myers have been commissioned to prepare plans for the proposed Civic Auditorium in Seattle.

Architect J. L. McCauley is preparing the plans for the Seattle municipal light warehouse, while Mr. Frank L. Barker will supervise the plans for an addition to the Firlands sanitarium and a new fire station at 30th avenue and Thistle street.

State Board of Architects

Following new appointments by Governor Hartley, the Washington State Board of Architect Examiners now consists of Harry H. James of Seattle, George Gove of Tacoma and Julius Zittel of Spokane.

The terms of the members of the California State Board, both Northern and Southern Divisions, have all expired and Governor Richardson is understood to be considering some new appointments.

Los Angeles City Hall

Curlett & Beelman, selected by the Los Angeles city council as architects for the $5,000,000 city hall, have filed a claim for $10,000, the preliminary payment on their fee for designing and supervising construction of the building. City Auditor Myers has declined to pay the claim until the legality of the architects' contract has been determined. The board of public works appointed Messrs. John Parkinson, John C. Austin and A. C. Martin, associated architects for the city hall, and suit has been filed in the court claiming that the council acted without authority in appointing Messrs. Curlett & Beelman.

Architects' League of Hollywood

The Architects' League of Hollywood has been organized with Charles H. Kyson as president; H. B. Pentland, vice-president, and M. L. Barker, secretary-treasurer. Weekly luncheon meetings are held by the league, the place of meeting being changed from week to week. Most of the architects located in the Hollywood district are enrolled in the organization which was formed to bring the members together in a social way and for the interchange of ideas.

Awards in Small House Contest

The following California competitors received prizes for their designs in the recent small house competition conducted by the U. S. Gypsum Company:

Angelo De Sousa, Berkeley, $500 for bungalow design; Harrison Clark, Los Angeles, $300 for bungalow; Howard S. Richmond, $300 for small house; Albert W. Ford, Los Angeles, $200 for bungalow; Angus Mc D. McSweeney, $100 for small house.

Tribute to Mr. Werner

"The Scottish Rite temple for the San Jose bodies is the most beautiful Scottish Rite building in the United States of America." Such was the statement made by Mr. A. B. Schribner, the architect who has been engaged by the Minneapolis Scottish Rite bodies to design a $2,000,000 temple for them, and to visit every Scottish Rite temple of any size in the United States before proceeding with the drafting of the plans.

The eastern architect had heard of the new building being erected in San Jose, and wrote to Mr. Carl Werner, the architect, for permission to inspect it.

Personal

Architect Robert M. Finlayson has moved his office from Sierra Madre to the Neville building, Monrovia, California. Mr. Finlayson would appreciate receiving catalogs and trade literature, also samples of standard building materials.

Architect Alfred Eichler has moved from 618 Canon Drive to the Francesca apartments, 12th and L. streets, Sacramento.

The partnership of Monaco & Bordeaux, architects, has been dissolved. Armand R. Monaco, architect, will continue the business at the same location, 701 Pershing Square building, Los Angeles, under his own name.

Mr. Edwin J. Ivey, Seattle architect, is in the midst of a nine-months study of European architecture, making sketches and photos of striking European design and decorations.

Messrs. Rudolph Weaver, Paul D. Richardson and Andrew Willatsen, delegates of the Washington State Chapter, A. I. A., to the national A. I. A. convention at New York City, gave a detailed report of the conclave to the members of the chapter at the regular meeting Thursday, May 7. Mr. Weaver is head of the school of architecture, University of Idaho. The other delegates are Seattle architects.

Mr. R. A. Herold, Sacramento architect, attended the First International Conference on City Planning, and the A. I. A. convention in New York.

Mr. Edward L. Mayberry, architect and engineer, has been elected representative at large on the alumni council of the Massachusetts Institute of Technology.

Architect H. J. Reed Barrett has moved his office from the Laughlin building to 2451/2 S. Western avenue, Los Angeles.

Mr. C. H. Snyder, structural engineer, 251 Kearny street, San Francisco, left May 19th with his family on a transcontinental trip by automobile. Their destination will be Illinois and Mr. Snyder expects to be absent two months.

$2,000,000 Tourist Hotel

The H. L. Stephens Company, San Francisco, is preparing plans for the proposed $2,000,000 tourist hotel at Portola near Woodside, San Mateo county. The hotel will have 275 rooms and will be called El Corte de Madera.

Palo Alto Residences

Architect Birge M. Clark of Palo Alto has completed plans for two residences to be built on the campus at Stanford University. One is for Prof. W. H. Davis and the other for Dr. E. K. Strong, Jr. They will cost in the neighborhood of $15,000 each.

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Unusual Building Procedure

A rather unusual procedure in the building industry has been undertaken by the San Rafael Military Academy with the assistance of its architect, Mr. S. Hyman, San Francisco. The academy has purchased four two-story dwellings which the United States government erected in Vallejo during the war at a cost of about $30,000 each, and these are to be carried across the bay on a barge and placed on new foundations in the grounds of the military academy. The houses will be used as dormitories. In addition, the academy will build an eight-room school from plans by Architect S. Hyman.

Chico Architects Busy

Architects Cole & Brouchoud, of Chico, are preparing plans for a three-story brick addition consisting of 25 rooms with baths, to the Tremont Hotel at Red Bluff, estimated to cost $25,000. The same architects are preparing plans for a two-story frame hotel at Quincy to cost $60,000 and which has been leased to Messrs. Hankley & Philbrook of Susanville. Plans are also being prepared for two four-room one-story brick school houses for the City of Oroville estimated to cost $30,000 each.

$1,500,000 Oakland Hotel

Plans are being prepared in the Oakland office of Architect William H. Weeks for a ten-story Spanish type hotel for Mr. J. K. Leaming, formerly owner and manager of the Leamington Hotel in Miami, Florida. The new Oakland hostelry will be erected on the southeast corner of Franklin and 19th streets. It will have 300 rooms. The structure will cost $1,500,000, the financing being in the hands of S. W. Straus & Co.

Open Berkeley Offices

Mr. James L. McCreery, formerly in the office of Architect W. H. Ratcliff, Jr., Berkeley, has opened an office for the practice of architecture at 2337 Shattuck avenue, Berkeley. In the same office with Mr. McCreery is Mr. B. Reede Hardman, who has designed a great many homes in the East Bay district in the last year or two. Both architects have considerable work, including a garage, apartment houses and residences.

Richmond Architect Busy

New work in the office of Architect Ernest Flores, 2534 Soito avenue, Richmond, includes a $13,000 firehouse for the town of El Cerrito, a $14,000 residence under construction in Mira Vista for Mr. Howard M. Flint and a $60,000 apartment house for a client in Richmond, and for which preliminary sketches are being made. Mr. Flores also has plans under way for a $10,000 commercial garage in El Cerrito.

New Steel Ordinance

A new steel ordinance was finally passed by the Board of Supervisors of San Francisco, May 18th, 1925, and this was approved by the Mayor on May 20th.

This ordinance contains the specifications of the American Institute of Steel Construction. Among other things the basic unit stress has been advanced from 16,000 lbs. to 18,000 lbs. to the square inch. This will effect a reduction of approximately 12½% in the amount of steel needed to meet any specific design, with a saving in dollars and cents.

The corresponding public, and especially all tax-payers, have a direct interest in the widespread adoption of these specifications inasmuch as the reduction in the cost of erecting schools and other public buildings to be effected through the use of these specifications will result in lower taxes. In manufacturing plants, apartment houses and other types of buildings the reduced cost should be reflected in lower rents and a cut in the charges which the general public pays, directly or indirectly. Many of our largest cities and several states, in fact, already have adopted the specifications as a part of their present building codes.

$20,000 Apartment House

Architects Schirmer-Bugbee Company, Thayer building, Oakland, have completed plans for a $20,000 apartment house to be erected on Erie street, near Mandana boulevard, Oakland, for Mr. Harry Fisher. The same firm has also completed plans for a brick garage on Broadway for Mr. A. W. Kiel.

Church and Parochial School

Architect George E. McCrea, 369 Pine street, San Francisco, is preparing plans for a $100,000 church for St. Catherine's Parish at San Mateo. A parochial school will also be built by this parish from plans already prepared by Mr. McCrea.

Moving Picture Theatre

Plans are being prepared in the office of Architects Miller & Pflueger, Lick building, San Francisco, for a Class A moving picture theatre to be erected on Polk street, San Francisco, for the T. & D. Circuit.

Everything Electrical

Having been sold on the advantages of complete electrification, E. L. Snyder, an architect of Sacramento, recently completely electrified his new home at 1111 Forty-third street, in that city.

$60,000 Claremont Home

Willis Polk & Company, 277 Pine street, San Francisco, are preparing plans for a large residence to be built in Claremont, Berkeley, for Duncan McDuffie of the Mason-McDuffie Company.

With the Engineers

Need of Individual Co-Operation for the Advancement of Engineers

By W. C. HOGOBOOM,
Los Angeles Chapter, American Association of Engineers

CONSIDERABLE discussion is being carried on these days regarding engineers, their value to modern civilization and the inadequate compensation they receive. An editorial along this line in the Saturday Evening Post a few months ago entitled "Science at a Discount," was reproduced in a number of technical and engineering publications, including the September issue of Professional Engineer.

Various remedies are advanced for the betterment of present conditions. Occasionally someone suggests the formation of a union similar to the present trade unions, but most engineers are vigorously opposed, as they should be, to any such lowering of the standards of the profession to the plane of trade unionism. The mistaken idea is still held by some people and even by some engineers that the aim of the American Association is the formation of an engineers' union. This may not seem possible, but it is true, and we should never miss an opportunity to correct this false impression.

An editorial by Mr. Percy Barbour in a recent number of Mining and Metallurgy, the monthly publication of the American Institute of Mining and Metallurgical engineers, suggests a line of action which seems to agree exactly with the aims of the A. A. E.

The subject of this editorial is "The High Cost of Having Hoover," and Mr. Barbour contends that engineers in general are inclined to expect recognition and prestige solely from the fact that Mr. Hoover is an engineer and without doing anything themselves to command recognition.

Among other things, Mr. Barbour says:

"In the performance of his civic duty in general the engineer is neither better nor worse than is the average citizen, but, in view of his special qualifications, he is more negligent of his opportunity. . . . .

"The engineer of today is not entitled to his place in the sun, which he thinks is an aching void because of his absence from it, because he is not earning it. Along strictly professional lines he shines with effulgent brightness, but along civic lines he is neglecting a grand opportunity. When a similar one came to Hoover, he saw it, seized it and it put him where he is.

"In every community of size and importance are engineering sections of the various national engineering societies and in the largest centers they have banded together in associations of engineers, all of which is good so far as it goes, but, with few exceptions, they complain of lack of interest of their members and lack of attendance at their meetings. . . .

"It is safe to say that in the communities having these associations of engineers there are no great civic engineering problems that are being handled as the engineers of those bodies believe is wisest from an engineering standpoint as well as for the best interests of the communities. The engineers are in a position to make themselves heard on these subjects and their voices would command for them a dominating position in the solution of these problems, and the beneficial result to the community would elevate the engineer to the 'place in the sun' which he now thinks ought to come to him solely by virture of the fact that he wears the title 'ENGINEER.' However, he is individually and collectively silent.

"The greatest fault of the engineer is that he is the almost typical individualist. He is inclined to be narrow, colloquial, and non-constructive except with the physical materials of construction. He does not know how to co-operate and he is not a leader. The engineering profession as a whole had many outstanding figures as engineers, but is sorely in need of a leader.

"Leaders are not born as often as they are developed, and until the engineer takes a leading part in the engineering problems of his community he cannot expect to stand out above the average level, and the chances are two to one against his having 'greatness thrust upon him'."

It is hard to understand why all engineers are not eager to engage in this work of raising the standing of the profession, and the only possible explanation would seem to be that the majority sim-

ply do not realize either the importance and necessity of this work to the profession as a whole, or the value received by the individual who engages in it. If they did know these facts, many more engineers would become active members of the Association, and our chapter meetings would have an attendance equal to or exceeding their total membership.

Engineer's License Law

A bill providing for the licensing of professional engineers has passed the California legislature and is now awaiting the signature of Governor Richardson. It is known as Assembly Bill No. 333 and was introduced and championed by Senator Robert B. McPherson of Vallejo, an electrical engineer. A bill for the licensing of professional engineers has been presented at every session of the legislature for the last eight years, but on account of differences of opinion among engineers both as to the advisability of licensing and the essential features of a licensing measure legislators took little interest in the matter until the session just closed.

The following are some of the salient features of the new bill:

Purpose: "To safeguard life, health and property."

Creates board of registration of five professional engineers to be appointed by the governor.

Board of registration may hold oral or written examinations; may revoke by four-fifths vote license of any engineer found guilty of fraud, deceit or incompetence. Majority vote only necessary to grant license.

List of licensed engineers to be filed each year with secretary of state and clerk of each county and to be published in at least two daily newspapers.

License fee to be $25, of which $15 shall accompany application. Fee or renewal of license to be $5 a year.

Professional engineers having at least 6 years practice entitled to registration certificate on payment of $25 if application filed within 1 year after act becomes effective.

Applicants must have at least one year's experience in charge of work.

Engineering diploma to count for four years of practice.

Provides for reciprocal registration of licensed engineers of other states on payment of $15 fee.

Registrants entitled to stamp drawings, specifications and reports with name and legend, "Registered Professional Engineer."

Registered engineers may practice through medium of or as employees of firm or corporation.

Federal officers and employees, employees of professional engineers and registered architects exempt from provisions of act.

Penalty for violation of provisions of act, fine of $100 to $500, imprisonment not to exceed 3 months, or both fine and imprisonment.

District attorneys charged with prosecutions under act.

* * * *

Mr. C. E. Drayer, secretary of the American Association of Engineers, Chicago, has pointed out that the period of adjustment to registration laws has been passing without friction of consequence, and the added year of operation strengthens the opinion that registration has come to stay, and comments as follows: "As usual in a movement of this sort, the first rush is followed by a slower period.

"In Pennsylvania the suit to test the validity of the law is pending and neither side seems anxious to push it to a conclusion. More opposition developed in Pennsylvania than in any other state and it was due largely to deficiencies, particularly slowness in administration. In New York, some thing like 8,000 engineers have applied for registration of whom less than one-half, it is said, are on the membership rolls in organized engineering, which would indicate that unsoundness of the position of those who hold that membership in a recognized society is sufficient indication of proof of ability to practice engineering.

"In some states there is a feeling that somebody ought to enforce the registration law, and in others there is the feeling that the law is weak but it is all that could be passed and amendments giving it teeth are in order.

"In one or two states there is the beginning of an examination of the expenses of administering the law to see if fees cannot be reduced. In some states engineers are beginning to look to the time when the effect of the "grandfather's clause" shall have worn off, and are thinking of ways to insure engineering a professional status comparable to that of medicine."

BOOK REVIEWS

Edited by
CHARLES PETER WEEKS

Masterpieces of Spanish Architecture, Romanesque and Allied Styles, by John V. Van Pelt, F. A. I. A., published by Pencil Points Press, Inc., 19 East 24th street, New York; 9x12, half cloth binding, 100 plates. Price $6.00 post paid.

This is a valuable contribution to Spanish architectural literature. Great care has been taken in the selection of material. Several hundred details, sections and elevations are shown, making it a book of great value to the student of architecture as well as a handy reference for the architect's drafting room. Many of the illustrations are reproduced from fine old plates, in fact the book is made up largely of reprints of plates, or portions of plates, from the official publication "Monumentos Arquitectonicos de Espana," undertaken by the Spanish Government about the middle of the last century as a record of the finest existing examples in Spain.

Practical Steam Hot-Water Heating and Ventilating, by Alfred G. King; 6x9, 400 pages, published by Norman W. Henley Company, 2 West 45th street, New York. Price $4.00.

This is the latest work on this subject, and has been written for all engaged in the practice of steam, vapor, hot water

heating and ventilation. The author has spent over thirty-five years in the heating trade and his experience covers every angle of the business. He is a registered heating engineer, the author of several steam heating books and has written many technical articles covering every phase of heating and ventilation.

This book tells how to secure heating contracts and how to install the most modern apparatus.

Paintings by Jules Guerin

A portfolio of extreme interest to all architects and artists has just been announced by Edward C. Bridgman, publisher, 240 West 40th street, New York City. It consists of full color reproductions, direct from twelve original paintings, by Jules Guerin. The plates from which these reproductions have been printed were made with extreme care by the Beck Engraving Company of Philadelphia, Pa. The twelve subjects are folio-ed in a buckram binding, 13¾ in. wide by 18 in. high. The subjects rendered are as follows:

1. The Almo Mission, San Antonio, Texas.
2. Christ's Church, Alexandria, Virginia.
3. Old Dutch Church, Tarrytown, N. Y.
4. The Missions, San Luis Rey de Francis.
5. King's Chapel, Boston, Mass.
6. Old Christ's Church, Philadelphia, Pa.
7. St. Paul's Chapel, New York.
8. First Congregational Church, Old Lynne, Conn.
9. The Mission of San Carlos.
10. Old Swedes Church, Wilmington, Delaware.
11. Old St. Peter's Church, Philadelphia, Pa.
12. San Jose de Acuayo, San Antonio, Texas.

It seems almost needless to go into any explanation of Mr. Guerin's work or to elaborate upon his ability as an architectural renderer. The retail price of this portfolio is $25.

COMMUNICATIONS

Filing System

Editor The Architect and Engineer,
San Francisco, Calif.

Sir: May I suggest or perhaps you can suggest to me a proper system for filing the various subjects published in your publication.

I have been filing under the various subjects such as One-story dwellings, Two-story dwellings, etc., then sub-dividing those into the different types of architecture as Colonial, Spanish, English, etc. Schools, Fire Engine and other Municipal Buildings, Office Buildings, Mercantile and Factory, Memorials, Bank, Apartments, Garages, etc., under their separate heads.

Very often I find it impossible to file my Architect and Engineer illustrations because of the fact that two different subjects will be put on the same sheet or rather leaf of your paper.

Take for instance the issue for May Pages 53, a two-story stucco dwelling page 54 a Brick Fire Engine House Page 55, a brick English page 58, a stucco Spanish, Pages 59 and 60, 75 and 76, 79 and 80, 81 and 82, 83 and 84, all offer to me the same difficulties.

I would appreciate any suggestion you may offer.

Yours very truly,
D. D. SMITH.

Editor's Note—Correspondence on this subject, outlining a possible solution, will be welcome. From our own observations we should think two copies of the issue would solve Mr. Smith's problem.

California Architects Doing Things

May 27, 1925

Editor The Architect and Engineer,
San Francisco, Cal.

Sir: Your May number just in, a bully number, all houses. Nothing to cut out but just file in toto in House File and those houses of your selection will loom up as the most attractive in that file. There's something to your work out there that's lacking in most of ours, a sort of belonging to the scenery, fitness and so livable. Here and there about the East I see one of your California designs copied or "adopted," but somehow they don't get the swing of it. Mayhap it's the atmosphere that's lacking. How be it my hat's off to you fellows thereabout. You are doing bully houses, and theatres, and business buildings. Doggone it, they give us cards and spades all down the line.

Hope you're well and happy.

Hastily,
F. W. FITZPATRICK,
Consulting Architect.

118 Church St.
Evanston, Illinois.

Worth Twice Its Cost

Los Angeles, Calif.
May 29th, 1925

Editor The Architect and Engineer,
San Francisco, Calif.

Sir: Enclosed herewith you will find check for $2.50 to apply on subscription for The Architect and Engineer.

Please accept thanks for the courtesy extended the past year. I would not be without the magazine for twice its present cost.

Yours truly,
PHILIP DEAN.

Construction Costs Unchanged

During four consecutive months there has been little or no change in construction costs, according to the American Contractor. "It is true," states this publication, "that there has been some minor fluctuations in various material prices, but there has been a balance between the 'ups' and 'downs' that makes the weighted average stand at 87.35 per cent of the 5-year average. This same condition is true as regards labor costs and the weighted wage rate is 118 per cent of the 5-year average."

The Engineering News Record finds that general construction costs are 4 per cent lower than a year ago and 24 per cent under the peak of June, 1920.

To Sell Electric Heaters

The Sol Electric Steam Heating Company has opened offices at 626 Ellis street, San Francisco, and is now perfecting a sales organization to sell Sol electric steam heaters in Northern California. This product is manufactured in Seattle by the Salisbury Turbine Motor Company.

The heater does not dry the air, burn the oxygen or produce poisonous gases or obnoxious odors. It was created to meet the demand for steam heated rooms for homes, apartments, schools and hotels. Complete specification with prices will be submitted to architects or contractors on request.

Trade Notes

California Leads as Clay Producer

No other state in the Union comes as near to producing all its requirements in brick and clay products as does California, according to Mr. Robert Linton, general manager of the Pacific Clay Products, who addressed the State-Wide Mineral Conference held May 15 at the Chamber of Commerce building, Los Angeles.

Representatives of the brick and clay products industries from all over California, numbering several hundred, assembled for the two-day meeting. The opening address was made by Mr. William Lacy, vice-chairman of the State-Wide Industrial Committee of the California Development Association and president of the Pacific Clay Products.

Mr. Linton's subject was "The Clay Products Industry of California." He said in part:

California manufactures all of the common brick, face brick, pressed brick, enameled brick, roofing tile, hollow tile, conduit and stoneware needed to supply the demand within the State and considerable quantities are exported as far north as Oregon, East and Middle West, and there is a considerable export trade to Hawaii.

California-made refractory brick and decorative tile are shipped to every country, even as far as the Eastern Seaboard.

The raw material required in the manufacture of these products is also taken from California almost exclusively. There are extensive clay products in both Southern and Northern California which will supply the needs of the industry for a long time to come.

While the California clay products industry is quite young in comparison with the Eastern states, California is now rated as the sixth state in the Union in the value of its clay products. The value of the clay products production in California for 1923 was $20,261,250.

Because of the wide-spread development of this industry in California, a much greater export trade to other states would undoubtedly be developed were it not for freight rates. As economical operation within the industry cuts down costs, this handicap is being gradually overcome, thus permitting the clay products manufacturers to export their shipments continually.

Many of our own specialties are being introduced in the Middle Western States and we are constantly increasing our sales territory.

Given Merited Promotion

Mr. A. T. Wintersgill, for eighteen years with the Pacific Clay Products Company of Los Angeles, has been made sales manager of the entire Pacific Clay Products organization, which comprises three manufacturing plants contiguous to Los Angeles, engaged in the production of face brick, sewer pipe, conduit, fire brick, flue lining and stoneware and other clay products. A recent survey of the industry revealed that Pacific Clay Products is the largest manufacturer of vitrified clay products in the West.

A Superior Type of Gas Radiator

After careful investigation of all types of heating, the school board at Inglewood decided that the safest and most efficient heating method—as well as the most economical—was the use of vented Pacific gas radiators, it was announced recently by Mr. A. J. Hartfield, president of the Pacific Gas Radiator Co.

"We are now installing this system in three public schools in Inglewood," said Mr. Hartfield, "and we were told that we were awarded this contract because of the strong letters of recommendation from other schools, hospitals and public buildings which are now using Pacific heating systems.

"Because of the recent epidemic of gas poisonings, officials of the Inglewood School Board were especially anxious that there should be no danger from the gas, and after a number of comparative tests they were convinced that the vent leading from every Pacific gas radiator absolutely eliminated any danger."

The Big Door Problem

The correct handling of big doors has always been a very hard problem for the architect, builder and contractor to solve, and with this idea in mind, the Richards Wilcox Company has recently issued a new catalog, suggesting the proper method of handling big doors under various conditions.

Whether it is round house doors, large industrial doors, fire doors or mill type doors, hardware for all these types are described in this catalog, a copy of which will be sent free to anyone writing for Catalog No. 41 entitled "Big Door Hardware."

Another book recently issued by the Richards - Wilcox Manufacturing Company is known as the Sliding and Folding Partition Door Catalog, No. 40. All the different types of accordion door hardware, including sliding - folding, sliding parallel and flush door arrangements, are carefully and fully explained in this 32-page reference book. Details and plan drawings give information of value to architects and contractors, and the many installation pictures give a good idea as to the application of this hardware.

A copy will be sent to anyone writing to Richards-Wilcox, Aurora, or any of its branch offices and mentioning this magazine.

Brick Company Rebuilds Plant

An increase of approximately twenty-five per cent in production efficiency of the Date street plant of the Los Angeles Pressed Brick Company is announced by Mr. C. C. Cady, assistant general superintendent of the three plants operated by the company. The increase is due principally to centralization of the major production operations in a modern brick structure, and to the use of steel industrial buildings for minor processes and to house various plant operations.

The new steel industrial buildings, erected by the Union Iron Works, together with the other new or rebuilt structures, represents an investment of approximately $750,000. The plant is said to be the only fire-proof brick and terra cotta plant in the West. Production efficiency, it was pointed out, has been raised by the increased lighting afforded in the steel industrial buildings, the greater accessibility of all units of the plant, and the installation of an improved overhead transportation system in the Date street plant.

"In rebuilding the plant after the fire of last December," Mr. Cady said, "special attention was paid to safeguarding workers and to economy in the use of power. These factors were taken into consideration in the installation of the new overhead system of conveyors and dry-pan elevators, all driven individually with reduction worm gears, encased in compact and neat containers. This does away with the former complicated system of belts, affording a saving of power, elimination of wear and safety to workers."

Architectural Effect

Old Farmer Gulleston of Raspberry Acres, having sold the south forty, took his bride of fifty years before on a trip to Europe.

"Look, S'manthy!" he exclaimed, as they gazed upon the leaning tower of Pisa; "the fella musta been drunk when he built that silo."—Life.

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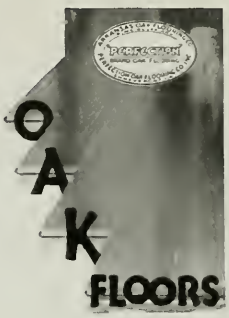
Phone Sutter 1360 SAN FRANCISCO



New Sales Helps for Oak Flooring

One of the most attractively illustrated booklets on oak flooring is now ready for distribution among prospective home-builders.

It tells the whole story of Perfection Brand Oak Flooring. You will find it of immense help in making sales.

We also have some very successful envelope stuffers for general distribution that we are supplying free.

Write today for these selling helps and full information about Perfection Brand Oak Flooring.

ARKANSAS OAK FLOORING CO.
Pine Bluff, Arkansas

BILTMORE HOTEL, ATLANTA, GEORGIA
Equipped with sixty McCray refrigerators

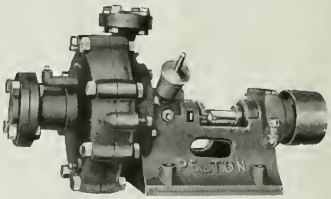
Hotel Has $20,000 McCray Equipment

The new Atlanta Biltmore Hotel, illustrated here, is equipped with sixty special units of McCray refrigerators, cooling rooms and chests. The contract for this elaborate installation amounted to more than $20,000. The new Atlanta Biltmore has been pronounced one of the largest and finest hotels in the country and the fact that it has installed McCray equipment speaks well for the high standard of this company's products.

Some of the units included in the installation are service bar refrigerator, help's kitchen refrigerator, cracked ice chest, oyster service refrigerator, sea foods and fish chest, poultry and meat refrigerator, etc.

PELTON

For Direct-Connection or Belt Drive



The illustration shows the pulley arrangement furnished with Pelton Type FD pumps when power is applied through a belted connection. The pulley is keyed to the end of the shaft in place of the coupling used for direct motor drive.

Specify this efficient pumping unit for your next water service job. Pelton engineers will gladly work out all engineering details and submit recommendations with no obligation incurred.

Our bulletin No. 21 describes this pump in detail and outlines its many applications. Send for your copy now for the convenience of future reference.

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